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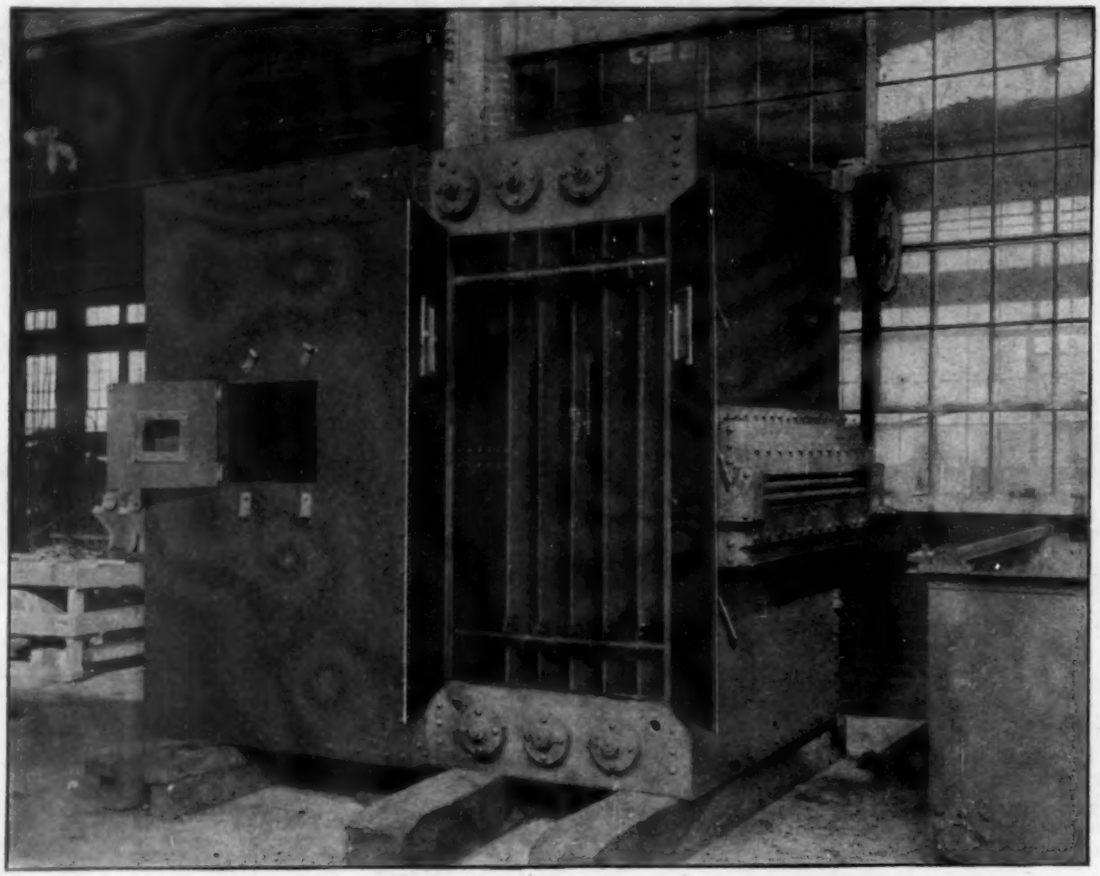

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THE
RUBBER AGE
AND TIRE NEWS

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BUSINESS MANAGER

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Chrysil, a New Rubber from Rabbit-brush

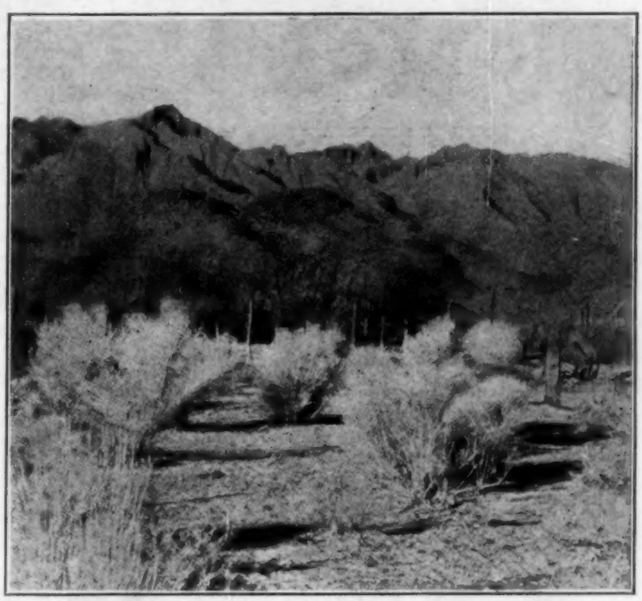
By Harvey M. Hall and Thomas H. Goodspeed
Department of Botany, University of California

The investigation here reported upon was instituted for the purpose of locating a supply of rubber which it was thought might exist in certain native West American shrubs. Of all the various species originally considered, those belonging to the genus *Chrysothamnus*, commonly known as Rabbit-brush, seemed to be the most promising, and consequently they have received the most attention.

This work was undertaken immediately after the entry of the United States into the recent war and had for its incentive a consideration of the following facts: that rubber is absolutely essential to modern warfare; that it is the only war essential not now produced in this country; and that, therefore, we as a warring nation would be seriously handicapped in case the enemy should be able to carry out his threats and put a stop to our oversea commerce. This danger of interference with our importation of rubber has now been happily averted but since no one is able to state with certainty that it may not recur, the location of a native supply is still a matter of national concern. Our studies have therefore been continued somewhat beyond the duration of the war and have resulted, as indicated in the following pages, in the finding of rubber of good quality in some of our western shrubs. If it were all assembled the total amount (estimated to be over 300,000,000 pounds) would be considerable, but the percentage content of the plants is too small to warrant harvesting except under stress of national emergency. The very fact that the shrub is not rich in rubber may have its advantages when the matter is viewed from the standpoint of the nation's needs. It means that the rubber will not be subjected to commercial exploitation and will thus be preserved as an emergency supply to be drawn upon only in case we reach such straits that its utilization becomes necessary notwithstanding the high cost of harvesting.

The very best protection against the possibility of enemy interference with our supply would be the development of a permanent rubber-producing industry in this country. Aside from the manufacture of synthetic rubber on a commercially profitable scale—a desideratum which does not seem to give promise of early realization—our only hope for this lies in the discovery and improvement of plants which can be grown in this country and which will be sufficiently productive to warrant their cultivation in competition with imported rubbers. One such species has already been introduced—Mexican Guayule (*Parthenium argentatum*), now being grown to a limited extent in southern Arizona. There is no assurance, however, that this plant can be profitably grown over a sufficiently large area to supply the country's needs in time of war, nor are we certain that it is the best one to be used. It is desirable that all promising sorts should be carefully investigated and their possibilities determined. These reasons have led to a broadening of the scope of our inquiry to include a preliminary study of the cultural possibilities of the plants under consideration.

This extension of the scope of the investigation has emphasized our deficiencies in time and facilities for the satisfactory prosecution of the work. Since it has been carried on thus far as a purely war emergency matter, the aim has been to assemble our information as rapidly as possible, and we have not permitted ourselves to become unduly engrossed in any phase of the work that seemed to require a long period of study or experimentation. The authors regret this keenly, since it means that the report here presented must be very incomplete; that many fundamental questions regarding both the scientific



Chrysothamnus nauseous variety *viridulus* mingling with variety *gnaphalodes*.

and practical aspects of the subject must go unanswered. It seems our duty, however, to place on record such data as we have, including particularly such information as will assist those who may interest themselves in a further search for rubber-bearing plants. Methods of carrying out the histological examinations and chemical analyses are for the same reason given in detail though they may prove neither novel nor instructive to the trained botanist and chemist. It is hoped that this report will serve as a basis for more intensive researches, either by ourselves or by others, when conditions are more favorable and that it will point the way to special investigations that have to do with the formation and occurrence of rubber in these West American shrubs and its possible utilization by man.

The preliminary studies here described have been in progress

for about two years but the work was carried on only during vacation periods and in such additional time as could be spared from regular university duties. In addition we have profited by the generous assistance of numerous co-workers to whom acknowledgment is duly made.

The discovery of rubber in *Chrysothamnus*, which was made about fifteen years ago, has been described by us in a recent paper[2] as follows:

> The choice of *Chrysothamnus* and related genera as the plants first to be investigated was the result of a preliminary examination made in 1904. In September of that year the late Judge A. V. Davidson, of Independence, Inyo County, California, sent some twigs to the Department of Botany for identification, with the information that the Indians prepared from the plant a sort of "gum" which they chewed. The plant was a species of *Chrysothamnus* of the *graveolens* group. Further samples were submitted at our request, and in October, 1905, a preliminary chemical examination of them was made by Professor G. E. Colby, of the California Experiment Station. This examination indicated the presence of rubber, but not in sufficient amount to warrant further investigation. A report to this effect was made public in the press and as a result some further examinations were made by at least one commercial rubber company. The matter was soon dropped, however. It is probable that the plants used in this commercial examination were of an entirely different species from those now being examined.

The examination of 1904 was followed with field work by the senior author in Inyo County in 1906, but no further chemical examinations were made. Professor Marcus E. Jones informs us that steps were taken about 1908 to erect a rubber-extraction plant at Salida, Colorado, the intention being to use Rabbit-brush but the plan fell through. He also tells us that as early as 1878 the Indians near St. George, Utah, taught some Mormon boys how to prepare rubber by mastication of the inner bark of these plants. It is evident that the Indians have long made use of the rubber as a chewing gum, but we have been unable to learn of any scientific study of the plants as rubber producers up to the time of our preliminary work in 1904.[3]

Nature and Properties of Chrysil

Chrysil is the name here proposed for the rubber prepared from any form of *Chrysothamnus nauseosus*. It was suggested by Dr. Frederic E. Clements and is selected because of its euphony and brevity as well as for its suggestion of the botanical name of the plants from which the rubber is obtained. "Chrysothamnus" in turn, is derived from two Greek roots signifying "golden" and "wood."

The first samples of Chrysil were prepared for us by mastication from shrub of the *viridulus* form by Paiute Indians at Benton, California. These pieces were in the form of cylinders three-fourths to one inch long by about three-eighths of an inch in diameter. They included, in addition to the rubber, small amounts of resin, fiber, and other impurities. They were brown in color, firm, scarcely if at all tacky, and seemed to possess considerable strength and elasticity. Two experts accustomed to the handling of crude rubbers declared them to be "of good quality and considerably better than rubber prepared from Guayule." These samples were exposed to air and light and underwent a gradual change, so that at the end of a year they were black in color and quite tacky on the surface, these changes doubtless being due to impurities.

Twenty-five pounds of *viridulus* shrub were gathered from the flats at Benton and shipped to Dr. David Spence, Chairman of the Subcommittee on Rubber and Allied Substances of the National Research Council, with the request that he prepare rubber from it and report on the yield and the quality of the product. The samples of shrub consisted of plants cut off a short distance below the surface of the soil and with all growth of less than three years removed; in other words, they consisted of those portions which would presumably be utilized in commercial operations. Dr. Spence very kindly undertook to make the examinations, and reports as follows regarding the preparation of the rubber and its properties:

> In preparing the samples for analysis the woody ones were ground up on a pair of corrugated rolls, or a "cracker," and the bark samples were ground up and sheeted out on a smooth roll. It is interesting to note that the bark forms a smooth sheet on the mill.
>
> Each of the four samples was placed in a bottle, covered with 100 per cent. benzol and shaken one hour. It was then allowed to stand twelve hours and the liquor drained off. This washing was repeated twice. After allowing the small dirt to settle out, the three combined washes were distilled to a small bulk, 400 to 500 cc. The rubber was coagulated from this concentrated solution by the addition of pure methyl alcohol. The coagulated mass of rubber was kneaded in fresh methyl alcohol and vacuum dried at 95 deg. C. The dried rubber is dark brown in color, has very little tackiness and considerable elasticity. When the solvents are removed by boiling in water, a very tacky rubber results.
>
> A larger sample of bark from both stems and branches was extracted and the rubber obtained was compounded as follows: rubber 100 g., zinc oxide 100 g., accelerator 3 g., sulfur 6 g. This compound was then divided into five portions and these were vulcanized for thirty minutes, sixty minutes, ninety minutes, two hours, and three hours, respectively. Forty pounds of pressure was applied in each case. The sixty minute treatment under forty pounds was full cure.
>
> These samples[4] indicate that the rubber vulcanizes readily and gives a product of a very fair quality. I have no hesitation in committing myself as to its value as far as it is possible to estimate this from such small samples as I was able to obtain. In order to report on the exact commercial value of this rubber it would be necessary to make many more tests and much more exhaustive ones, but from the small samples I sent you I can already safely say that the rubber is of high grade and average quality. It is not as good as the best fine Para, but it is a great deal better than most Africans or low grade rubbers. The results would indicate that the bark of shrub No. 64 (that is *viridulus*) might well be investigated more extensively as a possible source of crude rubber existent in this country.

Botanical Classification

The plants in which rubber has been found during the course of this investigation all belong to two closely related genera of the Compositae, namely *Chrysothamnus* and *Haplopappus*. The latter is apparently of little importance, for although rubber has now been found in ten of its species and in rather large amounts in two of these, yet the high-percentage species are small plants. This genus will be dealt with elsewhere.

The other, that is, *Chrysothamnus*, is a West American genus of about sixteen major species, but these include so many variations that some botanists would recognize more than one hundred specific segregates. Eleven of the major species of *Chrysothamnus* have now been examined and rubber found in five of them. One of these, *C. nauseosus*, is of outstanding promise; the other four are discussed further on.

Botanists are far from agreement as to the limitation of species in the genus, but for practical purposes it seems best to adopt a broad species concept and to recognize a considerable number of varieties under each of the species. According to this arrangement *Chrysothamnus nauseosus* constitutes a major species with twenty-two varieties. Twelve of these have been examined for rubber and it was found to be present in all of them. The complete botanical designation of each variety may be expressed by a trinomial, for example, *Chrysothamnus nauseosus* var. *graveolens*; *Chrysothamnus nauseosus* var. *viridulus*, etc., but for simplicity we may be permitted, in a special paper such as the present one, to omit the generic and specific names and refer to the various forms only by their varietal names. We shall, therefore, use such detached terms as *graveolens* and *viridulus* to express our concept of the respective varieties belonging to the very complex species known as *Chrysothamnus nauseosus*. It is hoped that this simplification will appeal to the non-botanical reader, who often has little time for and less interest in an involved taxonomic terminology and that it will, at the same time, meet the needs of the professional botanist. In some cases the name of a species itself will be used independently of its generic name.

The correct common name of *Chrysothamnus*, and more particularly of *C. nauseosus*, and its varieties is Rabbit-brush,

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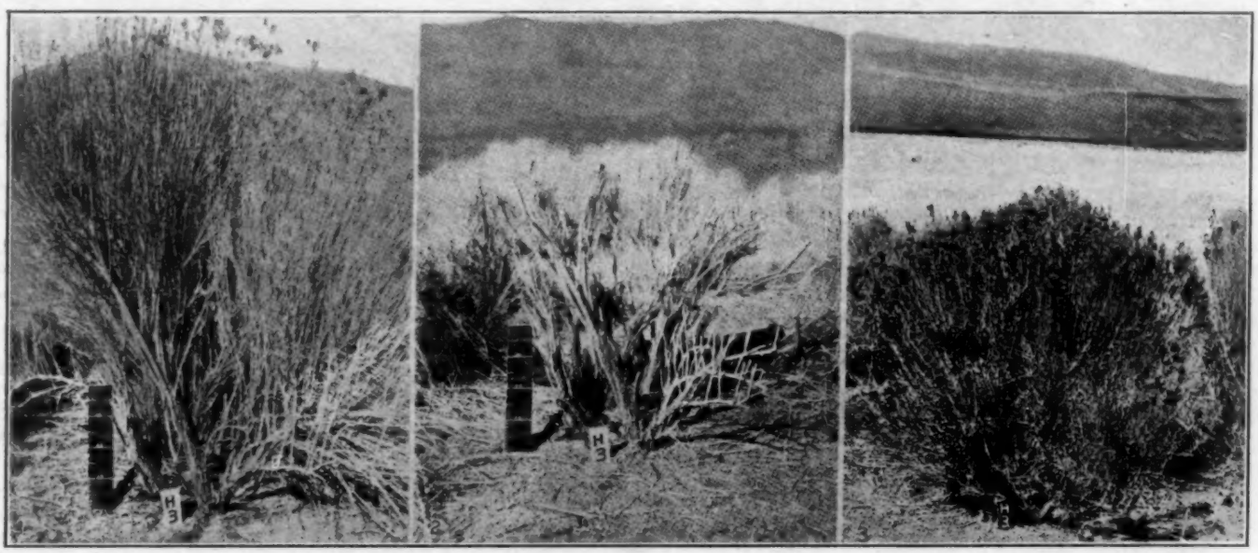
[2] Science, n.s., vol. 47, p. 452 (May 10, 1918).

[3] Since the above was written word has come to us that a factory was in operation at Durango, Colorado, as early as 1905 and that the company in charge of it actually placed upon the market rubber made from "Rabbit-weed." However, the results of further inquiry indicate almost with certainty that the plant used was not *Chrysothamnus*, but the "Colorado Rubber Plant" (*Hymenoxys floribunda utilis*).

[4] The five samples referred to by Dr. Spence are in the form of circular discs one-fourth inch thick by one and one-fourth inches in diameter. They are preserved in the Botanical Museum of the University of California.

a name which has been in use both among non-botanists and in botanical literature for at least twenty-five years. Through erroneous identification it has been frequently applied to other plants. In two publications it has been used indiscriminately[7] for species of *Chrysothamnus, Tetradymia,* and *Gutierrezia* and in a recent Experiment Station bulletin it has been adopted for *Tetradymia glabrata.*[8] But on grounds of usage as well as priority the term "Rabbit-brush" should be used only for species of *Chrysothamnus.* It is defined in this sense in three of the leading dictionaries used in America and also in some designed more especially for use in Europe. "Rabbit-brush" is given as the common name for *Chrysothamnus* in at least fifteen floras and technical reports and, so far as we can discover, it has never been defined either in dictionaries or in floras as belonging to any other plant. While there is considerable misapplication of the term by stockmen and other residents of the West, yet it is much more frequently applied to these plants than to any others. The name "Golden Bush" is used somewhat in the Rocky Mountain states. The undiscriminating sometimes fail to distinguish between these plants and Sage-brush, but the true Sage-brush (*Artemisia tridentata*) is a very different plant and may be recognized by the leaves, which are, for the most part, three-toothed at the summit, whereas in the Rabbit-brush they are always entire.



Chrysothamnus nauseosus variety *viridulus.* To illustrate method for increasing weight of rubber-bearing parts.

The Paiute name for any sort of *Chrysothamnus* from which rubber is prepared is *tsigupi;* or if the plant grows in sandy soil it is called *teba-tsigupi.* It is possible that the older Indians restricted the use of *teba-tsigupi* to some particular variety, but the younger generation is not so discriminating. Dr. A. L. Kroeber, who has indicated for us the proper spelling of these words, says that *teba* means "sun." According to Dr. David P. Barrows, the Coahuilla Indians of southern California call the *graveolens* form *tes-i-nit* and prepare from its twigs a tea taken for coughs and pains in the chest.

Chrysothamnus Nauseosus

All of the species of *Chrysothamnus* are shrubs. Some are mere dwarfs but those which interest us as possible rubber producers are usually of good size, measuring three to eight feet high, and about as broad. The rubber is present for the most part in those stem parts which are three years old or more, and these portions in average mature plants of the more important varieties (*viridulus, hololeucus,* etc.) will weigh from five to fifteen pounds (2.3 to 6.8 kg.). An exceptionally large plant found near Lone Pine, California, weighed sixty pounds exclusive of the twigs, and shrubs weighing twenty to forty pounds are not rare. For purposes of estimate, however, much smaller figures must be used. This is partly because the plants reach the maximum size only under favorable conditions and partly because they are frequently burned or cut off near the base, after which new stems shoot up only to be again destroyed before reaching maturity. After weighing numerous samples and after making thousands of estimates in the field the authors believe six pounds to be a fair average weight of the woody portions of the *viridulus* variety as it grows in eastern California and western Nevada. This includes the root to a depth of only four inches (10 cm.). This estimate does not include young seedlings nor young second growth.

On a similar basis it is estimated that individuals of *consimilis,* the common variety in northeastern California, Nevada, and western Utah, will average five pounds, while variety *pinifolius* of Utah, southern Colorado, etc., will average four or five pounds.

The rubber producing kinds of Rabbit-brush all grow from deep taproots which have normally but few main laterals. There are usually several trunks from a single base and these are clothed in age with loose, fibrous brown bark which peels off in strips. Straight clear stems are the exception. The branches are usually numerous; they often exhibit many distortions and irregularities and are of unequal size. This has a bearing upon the possibility of decortication by machinery, a point of considerable practical importance. The rubber is carried chiefly in the inner bark and in the very outermost portion of the wood, so that decortication would greatly reduce the bulk and weight of the material to be extracted. The irregularities just mentioned would presumably render decortication by machinery impracticable as far as wild shrub is concerned. If the plants are brought under cultivation they would be more regular and uniform in their growth and the separation of the outer layers might then become feasible. According to Dr. D. Spence the bark could be very easily separated from the wood on a large scale even in irregularly shaped plants by soaking in hot, dilute, caustic soda solution. The young shoots are long, straight, and erect in *viridulus;* similar but shorter in *graveolens* and *consimilis;*

[7] N. Am. Fauna, no. 35 (1913), pp. 28, 31, 37; no. 42 (1917), pp. 79, 81.
[8] Nevada Experiment Station, Bull. 95 (July, 1918), pp. 2, 7.

very much branched and twiggy in *gnaphalodes* and *hololeucus*. In all of these forms they are covered with a closely packed gray, green, or white felt-like tomentum which is deciduous only after several years. The narrow entire leaves are rather sparse and may be either green, as in *consimilis* and *graveolens*, dull green as in *viridulus*, or gray as in *gnaphalodes*. In typical *nauseosus* and in *hololeucus* the foliage is entirely covered by a beautiful soft and white woolly tomentum.

The flowers are yellow, very showy, and grow in heads arranged in dome-shaped to oblong clusters terminating the stems. The plants are therefore highly ornamental during the flowering season, which extends from August to October. At that time the large, round-topped shrubs are crowned with a profusion of golden-yellow flower-clusters. As winter advances the flowers wither and fall, the foliage becomes more and more sparse, and finally only the naked gray or dull green twigs and empty involucres remain. The young twigs then die back for a considerable distance. But soon after the first winter rains or snows new shoots, springing from lateral buds well down on the year-old wood, form a new top to the plant. Since the die-back of the annual shoots does not extend to the base, the general height, or level, of the old wood is increased each year. At the same time there is a thickening of all of the older stems through the addition of another annual layer of wood. The flowers of *Chrysothamnus*, which are very small and assembled into heads, as in all the Compositae, are much visited by honey bees and other insects. This assures cross-pollination and there is no evidence that the flowers are self-fertile. Seeds are set in abundance, and they show a high percentage of viability. These characters enable the plants to occupy quickly any suitable area that has been cleared of other brush.

The herbage of *Chrysothamnus* possesses a peculiar odor which varies somewhat with the different forms. The name *nauseosus* indicates that the type of that species was disagreeably scented, but this we have not been able to verify. In *viridulus*, however, the green stems when broken emit a very strong, disagreeable odor, especially penetrating if they are burned in a closed room. On the other hand, when the twigs and foliage of *gnaphalodes* and *hololeucus* are broken in the hand the odor is exceedingly pleasant, suggesting a combination of tropical fruits and berries. It seems probable that this is due to the presence of a volatile oil which might have commercial possibilities if properly exploited, more especially as a by-product in case the plants are brought under cultivation for their Chrysil.

The age of full-sized shrubs is quite variable, depending upon the conditions under which the shrubs have grown, and also possibly upon the botanical variety concerned. An estimate based upon counts of annual rings places the average age of the more important kinds, such as *viridulus* and *consimilis*, at about eight years. This is for plants weighting five or six pounds and growing in ordinary alkaline soil without attention or disturbance by man. Plants seldom reach full size before they are five years old, and they often increase in weight up to ten years and perhaps longer.

Distribution and Habitats of the Various Forms

Rubber-producing varieties of wild Rabbit-brush are widely distributed in western North America. They belong to the Lower and Upper Sonoran life zones, with slight extensions into the Transition, and range in altitude from about sea level in some of the desert basins to 8000 feet in the southern Colorado mountains. Some varieties of *Chrysothamnus* occur at even higher altitudes, but they have not been examined as to their rubber content. The plants are most abundant and of maximum size in the Great Basin area, becoming more and more scattered and apparently diminishing in their percentage of rubber as we pass outward from this center of distribution. The northern limits are reached in British Columbia, Alberta, and Saskatchewan, but no detailed studies have been made of plants from those districts. They probably contain rubber in only limited quantity and the areas covered by the shrub are not extensive. Our northern tier of states supports some *Chrysothamnus*, but only in the more arid portions such as southeastern Washington and southern Idaho and Montana. The most northerly points from which we have taken samples for analysis are in eastern Oregon (Redmond, Burns, etc.), eastern Washington (Spokane), southern Idaho and southern Wyoming (Rawlins, Laramie). The best samples carried only 3 per cent of rubber, and most of them ran less than two per cent. This low yield may be due to the habitat, or it may be that a larger series of examinations would show that we happened to select only low-grade individuals, and that the average is really as high as in districts lying farther to the south.

The easterly limits of the genus are reached in South Dakota and western Nebraska; the southerly limits in western Texas, southern New Mexico, and southern Arizona, with some possible extensions into Mexico, or at least into Lower California. Analyses have not been made of plants from these outlying districts, but the indications are that they are not good rubber producers. On the Pacific Coast we find scattered groups of the plants as far west as the Coast Range mountains, for example; San Benito County, Mount Hamilton, Lake County, Trinity County, etc. Four samples of *mohavensis* from Mount Hamilton averaged only 0.53 per cent of Chrysil.

Coming now to the more important areas centering around the Great Basin, we find that some of the densest stands and also the largest plants are found in the alkaline deserts of Nevada and eastern California. There are some large and important areas of the brush in southern Colorado and in Utah, but the plants in these states are not as good rubber producers as those farther west. Throughout the whole area Rabbit-brush is confined to certain definite tracts ranging in size from a few square feet to about 800,000 acres. It is prevented from growing in other places sometimes by unfavorable soil, moisture, or climatic condition; sometimes by the more aggressive habits of other species with which it is obliged to compete. For example, when the soil is very strongly alkaline it is either devoid of vegetation or supports such strongly alkali-tolerant species as Grease-wood (*Sarcobatus*), Pickle-weed (*Salicornia*), Sea Blite (*Suaeda*), and *Spirostachys*.

Where the alkali is somewhat less in amount but still too abundant for upland plants certain varieties of Rabbit-brush, particularly the green forms such as *viridulus*, *graveolens*, and *consimilis* become dominant and with Salt-grass (*Distichlis*), Poverty-weed (*Iva axillaris*), and similar plants cover areas of considerable extent. Here are found the most extensive and important stands of rubber-producing shrub, and the percentage of rubber is fairly high. The soil is somewhat moist, but too strongly alkaline for standard agricultural crops, and, since the native grasses and other forage and browse plants are of but little use to stockmen, the value of the land is very slight. The removal of the Rabbit-brush would favor the growth of grazing plants, as has been demonstrated by our experiments. However, the brush would again assert itself in a few years unless held in check. If it is found practicable to grow Rabbit-brush for its rubber, these extensive tracts could be had at a very low price and without serious interference to any established industry.

Passing upward from the alkaline flats just described, one often comes to better drained and scarcely alkaline slopes. Here the Sage-brush (*Artemisia tridentata*) is usually dominant and forms the extensive brush-lands of the Great Basin area. It mixes more or less with the Rabbit-brush varieties mentioned above, but it is less alkali-tolerant and so yields to them on the lowlands. On the slopes and higher plains, and especially in loose soil or along dry water-ways, the Sage-brush is often mixed with or replaced by another series of varieties of *Chrysothamnus*. These are the gray forms, particularly *nauseosus*, *speciosus*, *gnaphalodes*, *hololeucus*, and *frigidus*.

(To be continued)

The Importance of Trade Mark Advertising†

By F. H. Williams*

Litigation concerning trade marks is of unusual character, due to the fact that the circumstances of the different cases are not similar.

The recent decision of the United States Supreme Court in the case of the United Drug Company vs. Theodore Rectanus has brought to notice the importance of securing property rights in trade marks and the further protection by individual state registrations in the various states of the United States.

It has also shown the duty of every manufacturer to investigate every market in the United States to make proper search in the United States Patent Office, in each proper office in each State to examine their trade mark records and, above all, to make search in trade papers, to discover adverse use of the trade mark, if possible, before the same has been adopted.

The decision makes no hairbreadth distinction on the subject of property right in trade marks. It indicates that the American manufacturer, to properly protect his trade mark, must not alone register it in the United States Patent Office, but also in the individual states, and, above, all, make his trade mark known by extending his business.

Importance of Trade Journal Advertising

A prior decision in what is known as the "Tea Rose" case by the same court showed the importance of trade journal advertising, because there the United States Supreme Court held that a prior user was not permitted to interfere with a subsequent user when he had unduly delayed extending his business into the territory occupied by a subsequent user.

There is no doubt that proof that the trade mark has been advertised in some trade journal, and further proof shown that the trade journal had national circulation among the trade throughout the United States, and that the trade mark has been registered in various states of the United States, that these proofs would show that every effort was made to extend business throughout the country or world.

Some concerns spend hundreds of thousands of dollars in a National Advertising Campaign of newspapers and magazines; often disregarding the Trade Journal on the assumption that their National Advertising becomes known to every merchant. It can be reasonably assumed that a merchant or jobber would take a Trade Journal of the kindred lines that he was selling; but it certainly could not be assumed that the same merchant was reading all of the leading national magazines, all leading newspapers.

With this reasoning, the right is then fixed (with evidence if properly authenticated, that could be produced in a court of record if necessary) as of the time when the use of trade mark is had through such trade journal advertising, and not through the shot-gun national advertising expedient that some stray shots of advertising might hit the target, viz., of dealers or jobbers who would be interested in your product.

U. S. Court Indorses Business Paper Advertising

The United States Circuit Court of Appeals (226 Fed. Rep., p. 553) says, "Trade Journal Advertising enables the trade mark proprietor to put his article and its name before the entire trade; and the custom of so doing has been well-nigh universal."

The function of a trade mark is to indemnify the origin or ownership of the article to which it is affixed. To protect the consumer. But one cannot be permitted to monopolize markets that his trade has never reached. It is a known fact that the trade journal reaches all markets, so that this problem is solved.

The owner of a trade mark must use his mark in trade and in the markets; this is done in part when he uses the trade journal to advertise his mark and his product.

It must not be assumed that the placing of one advertisement in a trade journal of the trade mark and the product is all that is necessary. Localized advertising also has its importance.

One Announcement Not Sufficient

Advertising means something else besides just one advertisement; it means a reasonable diligence of effort for trade through advertising, thus bringing notice to the trade of the trade mark and the product. Advertising must be had at stated intervals—inactivity in advertising is just as bad as inactivity in salesmanship.

It is impossible for manufacturers to know whether their articles are placed in stores throughout the states by their jobbers and thus offered for sale. It is also impossible to have agents in all important cities to sell it. It is not impossible for any manufacturer to cover his partial protective grounds by advertising in his trade journal.

Every owner of a trade mark should carefully read the verbatim copy of the decision of the United States Court in the cases of the United Drug Company vs. Rectanus, because this decision differs in interpretation from the opinion of the majority of those members of the bar who have specialized in the law of Trade Marks. Omission is not seeking every source of trade mark protection possible, state, national and international, is serious, and it always has been so, and the longer it is delayed the greater becomes the damage.

Trade marks are given additional importance in another decision of the United States Supreme Court in what is known as the Colgate & Co. case on the question of fixed re-sale prices of a trade marked article, permitting the manufacturer to engage in an entirely private business, freely to exercise his own independent discretion as to parties with whom he will deal.

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* Vice-President, The Trade Mark Title Company.

Book Reviews

"Typical Graphic Records." Published by The Esterline Co., Indianapolis, Ind.

This twenty-four page booklet is the product of the Esterline Co., of Indianapolis, Ind., who are regarded as pioneers in the manufacture of curve drawing instruments, and treats exhaustively of the possibilities of curve drawing instruments when applied to factory problems. The instruments in question record the performance of units in plants and are in the nature of meters which contain an accurate measuring element, which instead of being read periodically by the eye, writes a continuous record of its indications on a record chart, which is propelled at a uniform rate by a clock movement. The booklet contains illustrations of the meters themselves as well as reproductions of graphic records they have made under various conditions.

"Third Annual Report of the United States Council of National Defense." The United States Council of National Defense has issued its third annual report for the fiscal year ended June 30, 1919. The report, which covers 160 pages, is exhaustive in its fullness and covers every phase of the Council's activities in detail. The duties and functions of the Council are analyzed and there are reports from every board and division of the main body. In addition to this there are a number of charts attached to the report which serve to illustrate the information imparted in the text.

Acoustical Engineering in Manufacturing Plants

Acoustical engineering and its growing importance in the world of industry were extensively discussed recently before the Western Efficiency Society by Prof. Vladimir Karapetoff, of the electrical engineering department of Cornell University. The professor, who is consulting engineer of the Klaxon Company, has been engaged for the last year in extensive acoustical and signal research work in various of the larger manufacturing plants and his findings relative to penetration of the normal noise of a factory by audible code signals are peculiarly interesting.

Prof. Karapetoff predicted that very shortly the builders of modernly equipped manufacturing plants of the larger types, where the noise is excessive and the units more or less separated, will be giving just as careful and expert attention to the installation of audible code calling signaling devices as they now accord the features of heating, ventilation, lighting and sanitation. The one, he insists, makes as much as the other for economy, efficiency, safety and the speeding up of production. Neglect of either essential means decreased accomplishment.

In the truly efficient manufacturing plant, he contended, every official, departmental head and production foreman must be in a position instantly to communicate with every other official or employe occupying a position of responsibility. They must, in emergencies, be able to locate the other man without delay. Prof. Karapetoff's investigations have been directed at the solution of the problem of just what kind of signal will best penetrate and dominate the normal noise, however excessive, in a particular factory, and be audible at all times.

The secret of acoustical engineering, he explained, lies in the scientific application of sound to overcome the various normal conditions of factory noise. With a turbine engine, deafening in its roar, the notes of a soft toned bell have been found peculiarly effective in their penetration, with noise of the discontinuous percussion type, such as prevails in a boiler factory, a horn with its steady sound, immediately attracts attention.

Necessity for some code calling device in the present day factory arises from various causes, but chiefly it is desirable as a means of quick communication between managing and departmental heads. In large plants it may also be used as a means of signaling in case of fire, or as a means of notification that it is intended temporarily to shut off the power, water or light, or for any other of a dozen emergency warnings. In fact it can be made to the production departments what the telephone is to the general offices, an indispensable adjunct, and further, in the plant telephone installation, it can work a wonderful increase of efficiency inasmuch as the code calls in every personal instance, direct the one called to the nearest phone.

Generally speaking, its most frequent use will be for calling into conference or to the front office, heads of different production departments. An emergency call, for instance, may come from a distant branch office for a quotation upon some large, prospective order for quick delivery and involving special features. This may make necessary an immediate conference between several members of the staff, say a production man, a technical expert, someone from the supply department and possibly an employment specialist. Rapidfire conclusion may be imperative.

Rarely may all of these men be found at their desks. Their duties require them to be here, there or yonder. Their value does not always lie in their filling an office chair. Reaching them by telephone is not always possible. Finding them by messenger is a slow and exasperating process. Delay is nerve-racking when moments are golden and the esprit de corps is weakened when the organization fails to function smoothly and harmoniously. Extreme delay means not infrequently a money loss as well.

Take a pencil, Prof. Karapetoff suggests to the average manufacturer, and figure out approximately how much time has been lost within the last year by not being able to get your departmental heads or other immediate associates promptly on the phone. Estimate roughly the time lost for the same reason between your superintendent, engineers, office force and foreman. Add something for the dissatisfaction and exasperation this has caused in your organization, then capitalize it all in terms of your production and money. You will find the most expensive code calling system to be a cheap investment.

Prof. Karapetoff used an interesting series of lantern slides in illustrating the propagation of sound waves under varying conditions, and gave a practical demonstration of code calling by the use of a klaxocater, an electrical mechanism equipped for both light and audible signaling. Under this system each man in a responsible position is given a code number, or a series of numbers each having a different meaning. The mechanism is operated by a telephone operator and sounds the calls automatically, once it has been set on a desired number.

In a plant of scattered units the code calling system would sound simultaneously in every department the code number of the particular person wanted, once or as many times as necessity demanded. According to what the particular code number signified to him this man, upon hearing his number, would either step immediately to the nearest telephone, or he would finish his immediate business before answering, or he would hurry to the front office without losing the time to answer. Or should the call sound a warning for all, such as notice that the light, power or water was to be shut off immediately, the operatives would take whatever precautionary measures were necessary.

While emphasizing the necessity for taking up all lost motion possible and speeding up production, now that demand is exceptional and a shortening of the hours of labor in many lines of industry is probably coming, the professor also lays stress upon the need for increasing industrial goodwill. To that end he cited the possibilities of announcing, without loss of time or interruption of effort on the part of the workmen, such things of general interest among them as the weather reports, results of baseball and football games, elections, and athletic contests generally.

Wherever code calling systems have been installed, he declared, there has been an instantly marked improvement in the general esprit de corps. Superintendents, electricians, all the "floaters" in the organization, no longer hesitate to leave their desks for fear that the big boss may need them in a hurry and not be able to find them. The whole factory becomes their headquarters and they go and come as conditions and necessities warrant, with complete confidence that they will always be available when needed and with a correspondingly increased efficiency and value to the plant.

Acoustical engineering, the professor maintained, while not as generally recognized as some of the other specialties in industrial construction, is destined to play an important part in American industrial and trade supremacy. Factory acoustics, as applied to code calling systems and equipment, bear the same relation to factory efficiency, economy and safety as do lighting, ventilation and sanitation. But satisfactory results must not be expected where one goes into the open market and buys horns, bells, push buttons, etc., and intrusts their installation to a novice unlearned in the science of sound penetration and the fundamental principles of acoustic calling. To attain the highest degree of perfection and the best results submit your problem to the careful consideration of an expert.

Supporting Apron for Leather-Working Machines*

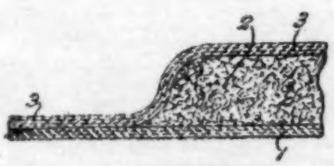
This invention relates to resilient work-supporting means and concerns principally work supports employed in machines for working leather, hides, skins, etc., although it may admit of application to the work-supporting devices of other machines such as calico printing and paper-glazing machines.

The invention has reference mainly to work-supporting means applicable for use in setting-out, fleshing, unhairing, and like machines, where the leather, hide or skin is supported during treatment by a bolster, apron, endless hand, roller or some similar carrier or bed. The construction provides increased and uniform resiliency. To this end it makes use of a pad or filling of cellular or porous material, such as rubber-sponge.

The inventions consist of a bolster, apron or like work-supporting bed characterized by the feature of a layer of suitable thickness composed of cellular or porous material (for example, sponge rubber) situated between and attached to outer layers or suitable covering material, the cellular layer acting as a resilient pad and also as a restraining medium between the outer layers, the latter preferably forming a case and enclosing the cellular layer, and with or without a fluid pressure between the outer layers.

Preferably the device is constructed to be used with an internal fluid pressure such as may be provided and maintained by a pump or by inflating and then sealing up the case of the device. On the other hand, the device may be adapted for use without such fluid pressure, the natural resiliency of the intermediate layer of porous material being depended upon to render the device yielding.

The outer layers of material are attached to the whole surface of the intermediate porous layer so that when a fluid pressure is employed internally the said outer layers are restricted against undue expansion at any point, and the pressure is equalized over the whole of the work-supporting surface. The intermediate layer, in addition to serving as a binding medium between the outer covering layers, for the purpose of limiting expansion, also serves as a resilient



cushion to prevent undue compression of the work supporting surface, and further, owing to its cellular or porous character, permits of comparatively free displacement of the enclosed fluid from one part of the interior to another.

While the material known as rubber-sponge is believed to be eminently suitable for the purpose of forming the intermediate layer, the invention is not to be restricted in this respect; as some equivalent material may be employed to constitute the filling.

The outer layers of the device or the enclosing case may be formed of a fabric such as duck or canvas with or without rubber, or leather or rubber may be used for this purpose. Each of said layers, i.e., the cover on either side of the porous layer, may be composed of a plurality of thicknesses of the same or different material.

The improved bolster shown may be formed of a strong foundation consisting of one, two or more thicknesses of duck, on which is vulcanized a layer, 2, of rubber-sponge, on which is vulcanized a top covering 3, consisting of one or more thicknesses of duck. The top covering material 3 is preferably slightly vulcanized or rubber-coated on its outer surface to make it grease-proof on the face which supports the work. To form a better wearing surface the top of outer layer may be reinforced by a sheet of rubber, celluloid, or leather, or a combination of same, this being vulcanized or otherwise secured thereon or being arranged loosely upon the surface.

To form the layers 1 and 3 of converting material into a case to completely enclose the intermediate resilient pad 2, the layers may be made larger in area than the pad so that one, preferably the top layer, 3, or each of them, may extend over the edges of the pad 2, the layers being fastened together, such as by vulcanization, around the margin of the device. One or more of the marginal edges of the casing may be furnished with eyelet holes or other convenient means to enable the device to be fastened in position for use or attached to the drum or table of the machine.

When the device is to be used as a pneumatic work-support or to contain a fluid under pressure, a valve or inlet tube is provided at a convenient locality for inflation.—Patent No. 124,595, to Alfred Seymour-Jones, "Pendower," Wrexham, and the Turner Tanning Machinery Co., Peabody, Massachusetts, U. S. A.

* From India Rubber Journal (London)

Information Exchange

Inquiry No. 121—Can you tell me the effects of ammonia (from ammonium carbonate) on a good high grade of gum stock after it has been cured? We are making a cellular inner tire to take the place of the inner tube. This tube is of a good grade of rubber so made up and compounded that in curing, the body of the gum is filled with minute gas pockets. Could you give me the names of other substances whereby we could get this result besides ammonium carbonate?

Answer—The ammonia has no effect on the rubber after it has been cured, except that under certain conditions it may accelerate the vulcanization when placed in the compound before curing. All goods made by this process should be washed until free from ammonia. Another substance which can be used is amyl acetate (banana oil). There is another process in which a thick rubber dough is made up and this is cured in a confined space which will produce very uniform cellular goods.

Lengths of Tubes Before Splicing

Inquiry No. 122—We are desirous of procuring the lengths of inner tubes before they are spliced in all sizes from 28 x 3 to 36 x 6.

Answer—The proper lengths of tubes before splicing are as follows:

28-in.	tubes	6 ft. 8	in.
30 "	"	7 "	
31 "	"	7 " 3	"
32 "	"	7 " 6	"
33 "	"	7 " 9½	"
34 "	"	8 " ½	"
35 "	"	8 " 3½	"
36 "	"	8 " 6½	"
37 "	"	8 " 9½	"

These lengths allow for splices which should be as long as the tube is wide when the tube is pressed out flat.

Firestone to Build in Singapore

Recent announcement has been made by the Firestone Tire and Rubber Company of the completion of plans for the erection of a $1,000,000 plant at Singapore. The new company, which is capitalized at $1,000,000, will be known as the Firestone Tyre and Rubber Company of Singapore, and it is stated that several thousand acres of property have been purchased and that contracts for machinery and buildings are in progress. It is said that the new plant will effect a considerable saving in the manufacture of automobile tires.

A recent statement was issued by Thomas Clements, comptroller of the company, to the effect that the new subsidiary would take over practically all of the work in preparing the eastern rubber for use in the manufacture of tires. The fact that the rubber will be handled at the Singapore plant will result in the elimination of considerable rehandling. This coupled with the cheapness of labor in that section of the world will bring about a considerable saving of money. In addition to the lessened costs the new plan will make for increased efficiency in that the rubber will be ready for the hands of the workmen immediately upon its arrival in Akron.

It is estimated that Firestone annually consumes approximately 35,000 tons of rubber practically all of which comes from the Malay Peninsula and the vicinity and is purchased from British corporations. The annual cost of the above amount is estimaterd to be $35,000,000. The Firestone organization at present controls about fifteen subsidiary companies of which the principal ones are the Firestone Tyre and Rubber Company of London and the Firestone Tyre and Rubber Company of Canada.

Buckeye Salesmen Meet

Salesmen of the Buckeye Rubber Products Company together with the entire executive, manufacturing and sales forces to the number of 300 met at the Hotel Winton, Dayton, Ohio, on November 29 to discuss plans for the coming year. The Buckeye Rubber Products Company, which was recently organized to manufacture mechanical rubber goods, has already acquired its plant at Willoughby and has placed orders for equipment.

C. H. Roth, president and general manager, welcomed all the employes and pointed out the prospects of the company. Webster Norris, a rubber chemist well known to the trade; Mr. Stimson, a leading authority on the manufacture of rubber goods; Mr. Mackay, one of the foremost rubber men in the country, all gave some intensely interesting facts on the mechanical goods and rubber sundries industry and drew attention to the future and the enormous amount of rubber goods sold throughout the world. John S. King, advertising counselor, sketched the almost magical success of well-known rubber companies, and then Mr. Roth proposed a toast to the company—enthusiastically drunk in water.

Cotton Production Shows Decrease

The Department of Agriculture estimates the total production of cotton in the United States for the season 1919-1920 at 5,275,000,000 pounds, equivalent to 11,030,000 bales. Production in 1918 was 12,040,532 bales; in 1917, 11,302,375 bales; in 1916, 11,449,930 bales; in 1915, 11,191,820 bales; in 1914, 16,134,930 bales; in 1913, 14,156,486 bales, and in 1912, 13,703,421 bales. This year's acreage was 33,960,000, against 37,073,000 acres last year and 34,925,000 acres in 1917. Price per pound of lint cotton to producers on December 1, 1919, was 35.7c., compared with a December 1 price of 27.6c. in 1918; 27.7c. in 1917 and 11.9c. in 1912.

Shilts Appointed Assistant Secretary

When W. D. Shilts came to Akron fourteen years ago in response to an advertisement in a Cleveland paper for a stenographer at the Goodyear Tire and Rubber Company, little did he realize that he was to forsake the teachings of Blackstone for the busy life of commerce. However, that is history—and today he is assistant secretary of the company and chairman of the Board of Control.

After he was graduated from Mt. Union College, Mr. Shilts began the study of law in Cleveland. Finding that it would

W. D. Shilts

be necessary to get work to pay his way while studying in 1904, he answered in person an advertisement placed by C. W. Seiberling. Arriving in Akron he was immediately engaged as the personal secretary of the then manager of the automobile tire department—at a time when the Goodyear output was twenty-five tires a day.

Close application and a comprehensive grasp of details brought him promotion after four months and he was placed in charge of the correspondence of that department and at the end of two years he was confronted with the difficult decision of choosing between law and a commercial career. Swayed by the argument and a realization that opportunities with Goodyear were unlimited, after four days' deliberation he abandoned the thought of a career at the bar—and remained with Goodyear.

From that time his rise was rapid. He was soon made assistant to G. M. Stadelman and chosen as head of the automobile tire department, then selected as manager of the salesman's department. His broad vision, coupled with exceptional executive ability, quickly brought further recognition and he was made chairman of the Board of Control. Last week he was made assistant secretary and became one of the officials of Goodyear, fourteen years after joining the company at the bottom of the ladder. Mr. Shilts will continue to act as chairman of the Board of Control.

Truck Representatives Discuss Roads

Representatives of the B. F. Goodrich Company recently acted as hosts at a luncheon tendered to a number of well-known truck sales managers and to Roy D. Chapin. The luncheon, which was held on December 8 at the Hotel Statler, Detroit, Mich., was one of many which were held at that hostelry during the week of the convention of the Motor Truck Sales Managers.

Mr. Chapin, who was formerly chairman of the Highways Transport Committee of the Council of National Defense at Washington, gave some extremely interesting information to the sales managers. He commented upon the growing feeling upon the part of law makers that the size of trucks should be limited or else should be heavily taxed. This he said was occasioned largely by the passenger car owners who contended that large-sized trucks wrought havoc with the roads. He stated that truck and trailer men should unite as the best means of guarding against adverse legislation. He also advocated courses in highway engineering in the institutions of higher learning and said that although the Department of Agriculture had an abundance of practical road men there was a dearth of scientific highway transport experts.

R. C. Hargreaves, former secretary of the Highways Transport Committee of the Council of National Defense, discussed the progress of rural express and stated that it appeals to those farmers who understand its advantages. The lack of appreciation on the part of lawmakers to the rural express idea, he said, was occasioned by the fact that they did not know very much about it. This lack of appreciation, he said, could best be overcome by the dissemination of knowledge relative to the system and its operation among the law-making bodies of the various states. He also advocated the establishment of courses in highways transport engineering in our universities.

The Goodrich representatives distributed a pamphlet to their guests which advocated the establishment of good roads and of courses of instruction in highways transport-engineering.

Government Desires Materials

The Navy Department has issued under date of December 9, 1919, a Notice of Proposed Purchases which embodies a list of materials desired by the United States Government, persons or firms submitting bids must in each and every instance give the schedule number of the article. Full particulars of the goods enumerated may be had on application to the Navy Department, Washington, D. C., or to the Navy Purchasing office or in the nearest navy yard. No date has been fixed for the closing of bids. Among the list of articles desired are several of interest to rubber manufacturers among them being: Valves, rubber, pump, miscelaneous, Atlantic and Pacific ports, 5,158; Hose, air, rubber, miscellaneous, various eastern and western yards, 5,135. The numbers given are the schedule numbers of the articles desired.

Ashcroft Resigns from United States Rubber

R. W. Ashcroft, advertising manager of the United States Rubber Company recently resigned his position. Mr. Ashcroft was formerly identified with the Canadian branch of the United States Rubber Company and accepted the position of advertising manager several years ago. His duties embraced the handling of the various products of the company including United States tires.

Positions Sought for Rubber Chemists

Major F. M. Crossett of Chemical Warfare Service States That Jobs Should Go to Men Who Gave Up Large Salaries for the Purpose of Aiding United States in World War

Major Frederick M. Crossett, U. S. A., attached to the chemical warfare service who is touring the country in an attempt to obtain positions for expert chemists discharged from that branch of the army, arrived in our office recently to further his campaign. "Establishments desiring specialists in all lines of chemical research need only to send their requirements to the director of the Chemical Warfare Service at Washington and their wants will be promptly taken care of," said Major Crossett. His slogan is "Give the discharged chemical warfare soldier, who gave up all for nothing, a chance for a job."

"These chemists are the nearest thing to real patriots that this country produced during the war," said Major Crossett. "When the United States entered the war we found it necessary to comb the country for volunteer chemists, and it was no easy task to secure them, for at that time there was a great demand for chemical specialists by manufacturing concerns. But we got 5,400 of them, mostly for $30 per month. Of this number 300 signed agreements to go into our stockades at Cleveland, O., and Edgewood, Md., and to stay there during the entire war without communicating with anyone.

"None of these men had an opportunity to get honors or commissions, for it was necessary that they remain on this side of the water, and most of them gave up large salaries. Now the Government feels an obligation to find suitable positions for them, and this task has been allotted to me.

"There are several reasons why a large number of these men have been unable to go back to work. One is that the munition establishments are no longer in operation, and another, the general unemployment conditions throughout this country."

Major Crossett has classified the experts of the department into 55 lines, as follows: Acids and alkalies, agriculture, analyzing, assaying, bacteriology, biochemistry, black powder, cement, ceramics, chemical engineers, coal tar products, dairying, dyes and dyestuffs, efficiency engineers, electro-chemistry, engineers, executive, fatty oils and soaps, fertilizers, foods, foremen, fuels, gases (not war), glass, high explosives, industrial, inorganic chemistry, inspectors, instructors or teachers, iron and steel, junior chemists, laboratory assistants, leather, managers of plant or office, manufacturing, metallurgy, mines and mining, organic chemistry, paints and varnishes, paper, pharmaceuticals, photographic chemistry, physics and physiology, plant operators, purchasing, pyrotechnics, research, rubber, sanitation, selling, skilled workers, sugar, starch, gums, supervisors, superintendents, textiles and war gases.

Major Crossett states that he can supply men skilled in any of these classified lines, and that full information can be secured from the Director, Chemical Warfare Service, Employment Bureau, Washington, D. C.

A small list of chemists skilled in the rubber industry has been supplied to THE RUBBER AGE by Major Crossett and any manufacturer desiring these names and addresses can secure them by writing this office in care of the editor.

New Firestone Mechanical Building

Permit for the construction of a mechanical building, which is to be the latest addition to the factories of the Firestone Tire & Rubber Company, was issued recently at Akron, and ground has already been broken on a site south of Firestone Plant Number Two.

The building will be three stories high and is designed to accommodate the electrical, machine, pipe, carpenter, pattern and tin shops. It will co-ordinate under one roof all the labor of this nature done in the various buildings of the big Akron tire factory.

With a frontage of 325 feet on Main Street, the building will have a depth of 315 feet. Approximately eighty per cent of the area of the walls will be of glass. The floor will be of wooden blocks laid on reinforced concrete. Careful attention has been given to ventilation. The most advanced ideas have been incorporated into the construction throughout. For example, traveling electrical cranes will carry heavy machinery. All mechanical equipment will be strictly up to the minute.

The cost of construction is expected to exceed $400,000. Firestone officials approved the design for the building after visiting many Eastern factories.

Annual Meeting of Trenton Manufacturers

The Rubber Manufacturers Association of Trenton, N. J., held its annual dinner and meeting at the Trenton Country Club on Monday evening, December 8. Nineteen representatives of the various rubber manufacturers in the Trenton district were in attendance and from reports a most interesting evening was the result of the gathering, this despite the dry times in Jersey.

During the dinner, informal discussion was held on various subjects but in the main the serious discussion was reserved for the business meeting which followed. The meeting was called to order by J. A. Lambert, President of the association, after which he reported on the activities of the past year. Mr. Lambert then proposed that the election of new officers take place and proposed John S. Broughton for the Presidency of the association. Mr. Broughton was unanimously elected and the other officers were re-elected: Charles E. Stokes, vice-president; Robert J. Stokes, secretary, and A. Whitehead, treasurer. Mr. Whitehead was unable to be present on account of illness.

In his talk Mr. Lambert spoke of the prospects for the future and boosted Trenton. Mr. Lambert has been proposed for the Board of Directors of the Rubber Association of America. Mr. Broughton, the newly elected president, then spoke and complimented Mr. Lambert on the success of the association under his direction during the three years since its formation in October, 1915.

The secretary, Mr. Stokes, then submitted his report. Following the report other members spoke on various subjects among whom were Messrs. Milner, Oakley and Young. Mr. Oakley was elected to represent the association on the Industrial Relations Committee of the Rubber Association of America.

Among those in attendance were J. A. Lambert, Acme Rubber Manufacturing Company; J. S. Broughton, Globe Rubber Tire Manufacturing Co.; Charles E. Stokes, Home Rubber Co.; Robert J. Stokes, Thermoid Rubber Co.; W. M. Milner, Bergougan Rubber Corp.; R. R. Whitehead, Crescent Insulated Wire Co.; J. Murray, Empire Tire and Rubber Co.; Bruce Bedford, Luzerne Rubber Co.; A. M. Sawyer, Vulcanized Rubber Co.; I. E. I. Reed, Mercer Rubber Co.; F. R. Sawyer, Mercer Rubber Co.; C. H. Oakley, Essex Rubber Manufacturing Co.; C. H. Semple, Semple Rubber Co.; Louis P. Destribats, Ajax Rubber Co.; Boyd A. Cornell, Hamilton Rubber Company, and H. M. Young, Hamilton Rubber Co.

Additions to Ames Holden McCready

H. A. Braendle, M. A., formerly of the general laboratories of the Canadian Consolidated Rubber Company, has joined the rubber section of the Ames Holden McCready System, as physicist in charge of its Montreal laboratories. H. F. Schippel, B. Sc., formerly research engineer of the Canadian Consolidated Rubber Company, has also joined the rubber section of the Ames Holden McCready System, as research engineer.

VIEW OF EASTERN PART OF AKRON, TAKEN FROM A GOODYEAR BALLOON AT AN ALTITUDE OF 1,000 FEET.

Condition of Cotton Market

The following report on the condition of the cotton market was issued by A. Norden & Co. of New York, N. Y., on December 11:

The market has been very nervous during the week, dominated from time to time by rumors as to the coal strike and the Mexican situation, besides attempts to discount the crop estimate of the Bureau of Agriculture. This was published at 2 P. M., December 11, and the figure 11,030,000 bales, exclusive of linters, was considerably above the average expectation and was followed by considerable liquidation.

With this estimate out of the way and the actual count of the crop in March not likely to show any appreciable discrepancy, the problem of the next few months will be the world's trade outlook, the situation will become exceedingly bullish, if conditions permit of cotton following its usual channels to a reasonable extent. The world wants cotton, and manufacturers are quite willing to pay much more than present prices for all they can get, if they are permitted, without too many obstacles, to buy it, receive it, pay for it and convert it into cloth; there is no trouble about selling the cloth at a good profit.

In this country the fuel problem seems settled and the labor question does not seem serious for the present, so that mills can probably turn into cloth without any serious interruption all the right kind of cotton they can buy. Europe, however, has its own troubles, and the financial situation is undoubtedly very grave; it is possible, however, that its gravity may be unduly magnified for a purpose, and that, as in many another crisis, the darkest hour has been promptly followed by dawn.

One point on which great stress is laid is the continued weakness in rates of foreign exchange. This undoubtedly makes it more difficult and more costly for foreign countries to import cotton, but from the moment it is imported and paid for, that portion of it that is destined for re-exportation, in the shape of yarn or cloth, has the advantage that all throughout the process of manufacture all expenses are paid in the depreciated currency, and the loss on exchange is not only recovered on re-exportation but there is actually a profit on all the costs of manufacture. Thus, to take the extreme case of a German spinner, if he could buy cotton landed at his mill at the same price in American dollars as an American spinner could buy the same cotton landed at his mill in Maine, the German could undersell the American in Argentina and make a handsome profit on the transaction.

The report issued on December 18 is as follows:

The market during the last few days has had a tired appearance, and although at times the undertone seems strong, it does not respond to bullish news with the buoyancy to which we have been accustomed. This may be simply the usual pre-holiday disinclination to undertake new ventures, or it may be that the situation, so far as known, has been discounted and possibly overdiscounted, leaving the market without special incentive until new developments may arise after the turn of the year. At such unprecedented price levels, a halt may at any moment develop into a selling out movement and for that reason we rather feel at the moment that the indications are for somewhat lower prices in the near future.

In the long run, however, there seems nothing bearish in the situation. Exports have recently followed the course we indicated in November, and are now nearly a million bales ahead of last year, with the stimulus of the Edge bill likely to furnish still more favorable comparisons before long. As to the crop, even on the government figures it is a million short of last year, and the conviction is growing that those figures are at least half a million bales too high.

We must continue, therefore, to feel that higher prices will be seen in due course, but we would rather wait for reasonable declines before buying.

Morris with California Goodyear

Marshall E. Morris, manager of the tire sales department of the Goodyear Tire and Rubber Company, has been chosen assistant general sales manager of the new California Goodyear Company. Mr. Morris joined the company in 1912 as head of the carriage tire department, but his skill for organization won him rapid promotion.

United Kingdom Seeks Tires

Reports received from the United Kingdom state that manufacturers of automobiles and motor cycles are faced with a shortage of tires which is exceedingly acute. Although the shortage of tires is world-wide it seems to be more seriously felt in the British Isles than elsewhere. The blockade prevented Central Europe from importing rubber to any noticeable extent during the war and there is a tremendous demand and a corresponding dearth of rubber goods in that section of the world.

Letters received from England indicate that the output of automobiles and motor cycles is seriously hampered by the lack of tires and that no relief is in sight. Shipping facilities are such that it is a difficult matter to ease the situation by importing the necessary finished product or raw materials. Growers of rubber as well as tire manufacturers state that production on a pre-war basis will not solve the problem as the demand for motor vehicles has increased tremendously since the days of 1914. The only solution in sight is an increase in production of crude rubber and manufactured articles together with better shipping facilities.

The following figures show the value of tires imported by the United Kingdom during 1914 and 1918 as well as the countries from which they were imported:

Rubber Tires and Tubes (not Imported with Complete Motor Cars.)

	1914. Value.	1918. Value.
Russia	£152,304	—
Germany	426,566	—
Belgium	116,025	—
France	331,070	£251,766
Switzerland	1,139	52,568
Italy	588,202	71,801
United States	270,550	210,755
Other foreign countries	2,198	—
Total from foreign countries	£1,888,054	£586,890
Total from British possessions	£4,752	£15,755
Total	£1,892,626	£602,645

Rubber Tires and Tubes (not Imported with Complete Motor Cycles.)

	1914. Value.	1918. Value.
Germany	£8,811	—
France	26,563	£15,529
Other foreign countries	4,644	44
Total from foreign countries	£39,708	£15,753

	1914. Value.	1916.	1918.
Total from British possessions (Canada)	—	£1,605	—
Total	£39,708	£1,605	£15,753

Mid-West Rubber Manufacturers Meet

Members of the Mid-west Rubber Manufacturers' Association attended the annual meeting of the organization at the Chicago Athletic Club, Chicago, Ill., on Wednesday afternoon, December 9. A large attendance was on hand for the business of the meeting and a number of interesting addresses and discussions featured the session.

The meeting was called to order at 2 P. M. by President John W. Maguire, following which Secretary Todd read the minutes of the previous meeting which were accepted as read. The president then appointed a nominating committee to decide upon the names of seven directors to be elected during the session. A letter was then read from the Newson Valve Manufacturing Company asking that the association agree upon a standard seal which could be used by manufacturers of tires and tubes to indicate standard make.

A committee was appointed to consider the plan of the Mississippi Valley Association which suggests the bringing of rubber, cotton and other articles used in the industry into the Middle West via the Mississippi river. T. M. Gardner, general manager of the Brighton Mills, stated that there was a dearth of cord fabric due to the shortage of textile machinery. Charles T. Wilson, of New York; Wesley E. Wilson of the Akron Rubber Mold and Machine Company, President Hanauer of the Washington Tire and Rubber Company, Spokane, Wash., and W. W. Wuchter, president of the Nebraska Tire and Rubber Company, of Omaha, were other speakers who touched upon matters of importance to the industry.

In the evening a banquet was held in the ballroom of the Chicago Athletic Club. An excellent menu and cabaret entertainment served to keep one and all in the best of spirits. The nominating committee submitted the following as directors for the ensuing year: John W. Maguire, Portage Rubber Company, Barberton; John T. Christie, Hawkeye Tire and Rubber Company, Des Moines; C. H. Wright, Racine Auto Tire Company, Racine; George B. Dryden, Dryden Rubber Company, Chicago; D. M. Mason, Mason Tire and Rubber Company, Kent; W. W. Wuchter, Nebraska Tire and Rubber Company, Omaha, and F. I. Chichester, Twin Tube and Rubber Company, Chicago. All of the nominees were elected unanimously.

Annual Dinner of Rubber Association

The Annual Banquet Will Take Place on Monday Evening, January 5, at 7 P. M.—Three Speakers Selected—Meeting Will Take Place on Afternoon of Same Day

The twentieth annual dinner of the Rubber Association of America will be held in the Grand Ball Room of the Waldorf-Astoria Hotel, New York City, on Monday evening, January 5, 1920, at 7 P. M., according to an announcement made by A. L. Viles, general manager and secretary of the association.

The price of tickets has been announced as eight dollars. The Dinner Committee in charge of arrangements is as follows: Horace De Lisser, chairman; A. H. Brown and F. C. Van Cleef. It is urged that reservations at hotels be made as early as possible on account of the congested condition in New York City at the present time.

The committee announces that arrangements have been made for seating guests at round tables accommodating parties of ten persons. Members desiring entire tables or those who wish to sit together but do not require an entire table, will kindly state their wishes when ordering tickets. The following have been secured as speakers: Charles M. Schwab, of the Bethlehem Steel Corporation; Lieut.-Gen. Robert L. Bulard, Commander of the Eastern Department, U. S. Army, and Senator Walter E. Edge of New Jersey.

The annual meeting will take place at 2:30 P. M. on Monday, January 5, at the Waldorf-Astoria Hotel, New York City.

The following names have been suggested for nomination for directors for the three-year period starting January, 1920: W. O. Rutherford, Homer E. Sawyer, A. H. Brown, J. S. Broughton and J. A. Maguire.

Plans for National Auto Show

Plans have been completed for the National Automobile Show, which will be held in New York City January 3 to 10. From present indications the exhibition will be the finest ever held in this country is the announcement made by S. A. Miles, manager of the show, who furthermore states that there will be on display eighty-five different makes of passenger cars, sixty-three makes of trucks and 284 accessories.

The passenger cars will be exhibited on four floors of the Grand Central Palace, Lexington avenue and Forty-seventh street, while the truck exhibit will take place at the Eighth Coast Artillery Armory, Kingsbridge road and 194th street.

Among the exhibitors of accessories whose products will be of interest to the rubber industry are the following: American Chain Co., Bridgeport, Conn.; Arrow Grip Manufacturing Co., Glens Falls, N. Y.; Au-To Compressor Co., Wilmington, Ohio; Automatic Safety Tire Valve Co., New York; Auto Pedal Pad Co., New York; Benjamin Electric Co., Chicago; Breeze Manufacturing Co., Newark, N. J.; Challoner Co., Oshkosh, Wis.; Coffield Tire Protector Co., Dayton, Ohio; Defender Auto Lock Co., Detroit, Mich.; Eastern Rubber Co., Philadelphia, Pa.; Essenkay Products Co., Chicago; Essex Rubber Co., Trenton, N. J.; General Electric Co., Schenectady, N. Y.; Hayes Wheel Co., Jackson, Mich.; Jiffy Jack Co., Cleveland, Ohio; Johnson Auto Lock Co., Chicago; Keystone Rubber Manufacturing Co., Erie, Pa.; Lightning Change Rim Corporation, Chicago; Morse Chain Co., Ithaca, N. Y.; L. J. Mutty Co., Boston, Mass.; Reliance Wheel Co., Youngstown, Ohio; A. Schrader's Sons, Inc., Brooklyn, N. Y.; Sewell Cushion Wheel Co., Detroit, Mich.; C. A. Shaler Co., Waupon, Wis.; Story Rubber Corporation, New York; Titeflex Metal Hose Corporation, Newark, N. J.; Triplex Tire Corporation, New York; United States Air Compressor Co., Cleveland, Ohio; Wellman-Seaver-Morgan Co., Akron, Ohio; Wire Wheel Corporation of America, Buffalo, N. Y., and Woodworth Manufacturing Corporation, Niagara Falls, N. Y.

Dealers Visit Automotive Centers

The hot-beds of automobile and tire production in the United States were invaded by forty "live-wire" automobile dealers from the land of cactus, cow-punchers, Indians and gushing oil wells during the week of December 9 to 15. The novel excursion was conducted by the Markham Motor Company, Oklahoma City, Okla., for forty of its Chandler and Cleveland dealers in Oklahoma, New Mexico, Panhandle Texas and Arkansas. The party visited automobile, tire and accessory factories in St. Louis, Indianapolis, Cleveland, Akron, Detroit and Chicago.

DEALERS ON EXCURSION TO AUTOMOBILE AND RUBBER CENTERS.

Headed by F. G. Reuter, Goodrich Oklahoma City branch manager, the delegation of Southwesterners arrived in Akron via motor bus from Cleveland, where they had made trips through the Chandler and Cleveland factories. A first hand study of the manufacture of automobile tires was made during a trip through the Goodrich plant. From the preparation and mixing of crude rubber to the curing or vulcanizing rooms the processes of making were shown in sequence. Several of the visitors expressed amazement at the volume of Goodrich production.

During a luncheon in Akron talks were made by W. O. Rutherford, vice-president and sales manager, and C. A. Dunham, Cleveland branch manager of the Goodrich Company. The party left the rubber center of the world for a visit to Detroit, the metropolis of motor manufacture. After Detroit, Chicago was also given the "once over" by the Markham delegation.

The entire undertaking marked a glowing example of initiative and efficiency. A special Pulman car, fitted with every convenience and amusement, carried the Markham party. To make sure that finance and transportation of orders placed during the trip were adequately taken care of, a prominent banker and an official of the Frisco railroad accompanied the Southwest dealers. The entire trip was financed by the Markham Motor Company and is said to have cost in the neighborhood of $10,000.

The dealers went back to their respective territories fired with enthusiasm and impressed with the optimism prevailing in the great automotive centers. And that they will be able to talk and demonstrate cars and tires more convincingly and profitably than ever before, is the opinion of Mr. Markham.

Victor Rubber Stock Goes Quickly

That there is still a good market for tire stock was shown recently in Cleveland when the brokers sold within a short time 9,900 shares of no par common stock of the Victor Rubber Company, of Springfield, Ohio. The issue was said to be three times oversubscribed.

The authorized issue of this stock consists of 50,000 shares, 35,000 of which are being offered at this time, the balance remaining in the treasury of the company. Of the present issue, a liberal amount of stock is reserved for old stockholders and employes. The balance was offered to the public at $35 a share.

By eleven o'clock the day the stock went on the market, there was not a share of stock on sale at the offering price. Chicago brokers offered $37 for the stock but could not be accommodated.

Akron-Williams Elects Officers

Stockholders of the Akron-Williams Company of Akron held their annual meeting on November 18 at which time the following officers were elected: F. E. Holcomb, president; S. F. Zilliox, vice-president; G. Carl Dietz, treasurer; William J. Slater, secretary and assistant-treasurer. Charles Reymann, Charles Herberich and A. W. Burnett were chosen as additional directors. The Akron-Williams Company entered into the production of vulcanizers and general tire repair machinery a number of years ago and has just experienced its banner year in business.

News of the Rubber Metropolis

Firestone to Build in Canada—American Rubber Increases Business—Record Year for Kelly-Springfield—Interlocking Increases Capital—Canadian Goodyear to Reorganize—Excel Rubber to Build

Firestone to Build in Canada

(*Special Akron Correspondence.*)

The Firestone Tire and Rubber Company of Canada, Ltd., with a capitalization of $5,000,000 has been organized by the Akron Firestone officers and will erect a plant at once at Hamilton, Ont. Operations will begin within a few months with a daily capacity of 3,500 tires of all types. Two thousand persons will be employed.

Announcement has been made that the company will develop a tract of 135 acres in Hamilton, factory buildings with 320,000 square feet of floor space to occupy half the tract, the other half to be used in a housing plan for employes.

The established manufacturing and business policies of the parent company will prevail in the new organization, the announcement said, but it will operate as a Canadian business, employing Canadian men and women.

"While the Canadian company will operate primarily for the purpose of meeting the Canadian demand for Firestone products," said Mr. Firestone, "it will share in Firestone's export business, especially that part originating in the British empire. At present Firestone is able to meet only a small part of the foreign demand for its products."

The new factory will be constructed on the unit plan, to allow for expansion as additional facilities are required.

In addition to the products made at Akron, the new company will manufacture a line of mechanical goods, including belting. It is probable that a boot and shoe department will be established. Plans are now being prepared for the manufacture of steel rims, and a plant of this nature will soon be under way.

The parent company now has 17,000 employes.

The sales forecast for 1920 calls for an output of over $120,000,000.

American Rubber Increases Business

(*Special Akron Correspondence.*)

The American Rubber and Tire Company is rapidly forging to the front among the smaller rubber companies in the Akron district. Directors of the company recently voted to call the $325,000 issue of seven per cent preferred stock at 107. They also have recommended to the stockholders the recapitalizing of the company with $2,000,000 common and $2,000,000 preferred stock. Present capitalization is $350,000. The business of the company this year will amount to $2,225,000 as compared with $800,000 a year ago.

Mason Sales Show Incerase

(*Special Akron Correspondence.*)

Sales of the Mason Tire and Rubber Company for the year ended October 31 amounted to $3,468,858 with net profit of $233,705, according to D. M. Mason, treasurer. This is an increase of approximately fifty per cent over 1918. The Mason company recently has opened ten additional direct factory branches in the United States, making eighteen in operation.

Record Year for Kelly-Springfield

(*Special Akron Correspondence.*)

The Kelly-Springfield Tire Company changed from coal to fuel oil during the recent miners' strike and was in a position to maintain production at the Akron plant during the serious fuel shortage. The Kelly-Springfield is finishing the most successful year in its history, its sales amount to approximately thirty-five per cent more than last year, while its net earnings will be the largest ever accumulated in the company's history.

Kelly's new plant at Cumberland, Md., will be completed early in the new year. This will give the company plants in Buffalo and Wooster as well as Akron and Cumberland and despite this increased capacity the 1920 output is completely sold.

Interlocking Increases Capital

(*Special Akron Correspondence.*)

Stockholders of the Interlocking Cord Tire and Belt Company of Mogadore have authorized an increase in the company's capital from $150,000 to $1,000,000 to take care of rapid growth of business and remarkable progress in certain patent right development. The company has been producing about thirty tires a day, exploiting a radically different idea in tire construction patented by Walter Kline. Work of enlarging the factory will go forward at once.

Canadian Goodyear to Reorganize

(*Special Akron Correspondence.*)

Reorganization of the Goodyear Tire and Rubber Company of Canada, Ltd., under a new Canadian charter with an authorized capital of $30,000,000 has been announced by C. H. Carlisle, treasurer and general manager.

It is proposed to issue $5,000,000 of preferred stock $3,000,000 of which will be sold on the Canadian side, while the present outstanding preferred stock will be exchanged on the basis of $110 for the old shares and $97½ for the new. Stockholders not desirous of making the exchanges will receive $110 for their stock in Canadian funds on Jan. 1 in addition to the regular quarterly dividend due on that date.

The present company has an authorized capital of $3,000,000 divided equally as to the common and preferred shares. Present outstanding stock consists of $850,500 of 7 per cent preferred and $888,500 of common, par $100.

Earnings have grown from $91,070 in 1910, the year the company was organized, to $13,976,349 for the year ending Sept. 30. Mr. Carlisle announced in his letter to stockholders.

Mr. Carlisle states the growth of the business and plans for the future, which include prospects for a large export trade, make it imperative to increase the capital.

Whorley Now with Mason

(*Special Akron Correspondence.*)

M. M. Whorley, for the past six years manager of the Firestone branch at Syracuse, N. Y., has joined the Mason Tire and Rubber Company, of Kent, to take the position of assistant sales manager.

Boom Seiberling for President

With 1920, the year of the presidential election, fast approaching, rumors concerning various candidates for the office of chief executive of the United States are flying thick and fast. The latest rumor to appear is to the effect that a boom will be started for F. A. Seiberling, president of the Goodyear Tire and Rubber Company. The author of the proposed boom is Thomas E. Miles, well known New York capitalist and politician, who is quoted in an Akron paper as follows:

"Mr. Seiberling is a great man," says Miles. "He has been remarkably successful in harmonizing capital and labor. He has led Akron manufacturers in inaugurating profit-sharing plans which really appeal to labor.

"Today any Bolshevist showing up in Akron would be run out of that city. Workers and investors are contented as a result of the good work originated by Mr. Seiberling, and you will find that Akron securities bring an unusually high price."

Excel Rubber to Build

The Excel Rubber Company, Wadsworth, Ohio, with capital of $600,000, is building a two-story brick building, 110x180 feet, for the manufacture of "Flint Cord" tires, "Excel" fabric tires and all kinds of tire necessities. The production of tires will begin about April 1st. This company has secured the services of men capable of producing high class goods, and also has a well established sales organization. The production for the first year will be about 200 tires per day. The company owns twenty acres of land along the main line of the Erie Railroad. The officers of the company are Wadsworth business men. M. H. Leatherman, president; H. D. Mench, vice-president, and R. M. Trump, secretary and treasurer.

Goodyear Increase Announced

(*Special Akron Correspondence*)

The Goodyear and Tire Rubber Company plans another big expansion to be undertaken immediately in the shape of a large factory building that will be erected at once in Akron, east of the present main factory. The present office space will be more than doubled by the erection of a large five-story office building immediately to the east of the present structure.

Present estimates are that the buildings will cost about $1,500,000. This may be exceeded because of climbing construction costs. Announcement of these plans set at rest rumors previously afloat that the company planned to make its future expansions largely in other parts of the country.

New Rubber Company to Be Organized

(*Special Akron Correspondence.*)

W. W. Wildman, former president and general manager of the Portage Rubber Company, of Barberton, is organizing a new company in Detroit known as the Wildman Rubber Company. The company is incorporated at $10,000,000 and will have a capacity of 5,000 tires daily.

Goodyear Declares Dividend

(*Special Akron Correspondence.*)

Goodyear Tire and Rubber Company directors have declared a dividend on the new seven per cent preferred stock payable January 1 to stockholders of record December 15. Holders who converted the second preferred stock into the new preferred will receive a dividend from November 1, while stock sold by the underwriters will carry a dividend from November 24.

MARKETS

Manufactured Rubber Goods

NEW YORK, December 10, 1919.

The effects of the strike of coal miners, which has practically stopped production of coal for the past month, have been felt in the rubber industry by the curtailment of the activities of manufacturers, and a consequent slowing down all along the line. Manufacturing companies operating in the West, which would include Akron, the tire city, have been forced to cut down their operations to three days a week, but it is hoped that this order will be rescinded soon as there are indications of an early ending of the strike.

Up to the shut-down order business had been booming throughout the industry. Tire manufacturers are constantly widening production, demand keeping pace with expanding output constantly. Tire manufacturers will have established a new record production by the end of this year, and they are already making preparations for an even greater volume of business next season. Some makers are experiencing difficulty in getting fabrics and others are needing raw materials.

AUTOMOBILE TIRES

Demand for tires is reported as fairly active, although the approach of cold weather has resulted in a slight falling off in consuming demand, as many motorists are now laying their cars up for the winter. However, more motorists are keeping their cars in use this winter, due to the generally unsatisfactory modes of travel, and it is believed that the winter business this season will be better than ever before.

Manufacturers are keeping their plants operating as extensively as present economic conditions will allow, and are reported to be laying up large quantities of tires to be used next spring when the demand sets in with full force. Many smaller companies are coming into the field, incorporation notices from all parts of the country mention many tire and rubber companies. In addition to this, many of the companies already established are being refinanced to provide for more working capital, and consequently better business.

DRUGGISTS' SUNDRIES

The market is showing more activity with the approach of winter weather, and retailers are reported to be laying in sundries in a fair way, although the buying is not unusually heavy for this period of the year. There is an active call for rubber gloves and other rubber surgical appliances coming in from abroad, countries all over the word buying the American product.

MECHANICAL GOODS

Demand for rubber belting is reported to be fair, although the continuance of existing strikes, and the inception of new ones, are slowing down industry and constantly lessening somewhat the demand for belting and other factory appliances. Mining companies are taking some supplies. The trade is showing much interest in the railroad situation. Thus far, no large purchases of coupling hose or other mechanicals on the part of the railroads has been reported, and it is not believed that much business from this source can be looked for until after the railroads have been returned to private ownership. Under existing control, supplies of the roads are pooled, but it is believed that as soon as the roads are returned to their owners heavy purchases of materials will be made, as the stocks now held by the roads are known to be depleted.

MISCELLANEOUS PRODUCTS

A good demand for rubbers, rubber boots and arctics is reported with the coming of winter weather, and manufacturers have done a good business on these articles this year, despite the competition from the sales of surplus army and navy goods of a similar nature. Buying of rubber heels continues active, dealers reporting that the call for this product is constantly expanding. Many new makes of rubber heels are making their appearance on the market, but it is only the heels of "live" rubber that appear to take well with the public, the harder makes being slow sellers. Rubber manufacturers specializing in the making of fibre soles are doing a good business with these products, the high cost of leather sole materials making for a better demand for the fibre product, both manufacturers and repairers buying. The season for jar rings just past was not a very active one, due entirely to the shortage of sugar, housewives being prevented from putting up their customary quantities of preserves.

Cottons, Yarns, and Fabrics

NEW YORK, December 10, 1919.

Trading in the local cotton market has been generally quiet during the past fortnight, with a steady undercurrent featuring although there was but comparatively little buying and selling being done due to the unsettled conditions. The coal strike has had its effect upon the market by curtailing operations at the mills and prohibiting foreign shipments of the cotton due to a shortage of fuel to supply steamships visiting American ports. Uncertainty over the Mexican situation has also had its effect upon trading.

England has been the only important foreign buyer in the market during the fortnight, buying some fairly large quantities of the staple. Other European countries are showing more interest in cotton because of the lowering of freight rates during the past few months, but as yet, the foreign exchange rates prevent much business with the other European nations, all of which are more or less impoverished by the period of hostilities just ended. The final report of the Department of Agriculture on the 1919 crop will be issued within a short time, but private advices indicate that the situation has not changed materially since the issuance of the report at the end of September, reporting a yield of 10,696,000 bales.

SEA ISLAND COTTON

Late advices from the Sea Island growing districts report that the boll weevil pest has done the usual damage this season, and growers are not looking for more than 25,000 bales this season. Many are giving serious consideration to the plan of planting entirely new seed, using the new Meade cotton, developed by the Department of Agriculture. The indifference of many farmers to the boll weevils and their apparent unwillingness to take active measures to combat this evil, has already practically eliminated Sea Island cotton from the industry, consumers turning to other long fiber stock.

EGYPTIAN COTTON

A large crop of Egyptian cotton is being grown this year, but American consumers are having difficulty in obtaining supplies, due to the heavy competition coming from European countries. Many foreign buyers are taking unusually heavy quantities of Egyptian cotton this year because of the short crop and the poor quality of the American staple of the 1919 crop.

AMERICAN-EGYPTIAN COTTON

There is a continued good demand for the American Egyptian cotton reaching growers from tire manufacturers, and the industry is rapidly being expanded in the Southwest. The high prices realized on this new long staple cotton are attracting many farmers to Arizona and lower California, where the growing of the American long staple has been established during the past few years.

TIRE FABRICS

Difficulty in obtaining sufficient quantities of long staple cotton is reported to be hampering the operations of fabric manufacturers. There is a strong demand for the fabrics, and manufacturers are working their plants at capacity to take care of their business, many having their output booked up for some time ahead. Larger quantities of the new Pima cotton are being used in substitution for the Sea Island and Egyptian cottons which are difficult to get.

HOSE AND BELTING FABRICS

There is a good demand for mechanical ducks reported, and the market is showing a strong tone due to the increased firmness in the market for raw materials and the advancing labor costs. Belting duck is meeting with a good demand.

and in addition, there is an active call for hose duck.

DRILLS, SHEETINGS AND OSNABURGS

There is a good demand for drills and sheetings reported in the local market, and prices are firmly held. Heavy shipments are going to foreign countries, Holland and the Scandinavian countries being mentioned as particularly active in the American market. Production at the mills has been slowed down somewhat by shorter working hours of the workers.

The War Department is selling large quantities of textiles, selling the goods "in the best market, either domestic or foreign" according to an announcement by the Department. The most recent offering is one of 700,000 bales of cotton linters, consisting of 49,734 bales of bleached cotton linters, 433,441 bales of munition cotton linters, and 197,543 bales of mattress cotton linters, distributed at powder plants and oil mills throughout the South. Orders have been issued by the Department for the assembling of about 300,000 bales of linters at Charleston, S. C.

BURLAPS

There is a fair routine consuming demand for burlaps reported, and the market is showing a steady undercurrent. The market on heavy burlaps is reported well sold up, but more consignments are coming from the Calcutta market. Lighter grades are in fairly liberal supply, and are meeting with a good consuming call.

TIRE FABRICS

17¼-ounce Sea Island, combed, sq. yd.	1.45	@1.55
17¼-ounce Egyptian, combed	1.20	@1.30
17¼-ounce Egyptian, carded	1.12	@ —
17¼-ounce Peelers, carded	.95	@ —
17¼-ounce Peelers, combed	1.20	@ —

DUCKS

Belting (pound bases) lb.	.65	@ —
Hose (pound basis)	.65	@ —

DRILLS

37-inch 2.35-yard yd.	.33	@ —
37-inch 2.75-yard	.29½	@ —
37-inch 3.00-yard	.28½	@ —
37-inch 3.25-yard	.27	@ —
37-inch 3.50-yard	.26	@ —
37-inch 3.95-yard	.22½	@ —
37-inch 2.00-yard Southern	Nominal	
37-inch 2.00-yard Northern	Nominal	
40-inch 2.40-yard Southern	Nominal	
40-inch 2.40-yard Northern	Nominal	
52-inch 1.90-yard Southern	Nominal	
52-inch 1.90-yard Northern	Nominal	

SHEETINGS

40-inch 2.35-yard yd.	....	@ .....
40-inch 2.50-yard	.32	@ —
40-inch 2.85-yard	.28½	@ .29
40-inch 3.00-yard		
40-inch 3.25-yard	.24½	@ —
40-inch 3.75-yard	.23½	@ —
40-inch 3.60-yard	.26½	@ .27½
40-inch 4.25-yard	.20½	@ .21

Note.—In view of the unsettled conditions prevailing in the market at the present time, the prices quoted above are more or less nominal, and are not guaranteed.

BURLAPS

(Carload lots)

	Cents Per Yard	
7 -ounce 40-inch	Nominal	
7½-ounce 40-inch	Nominal	
7½-ounce 45-inch	Nominal	
8 -ounce 36-inch	.... @	....
8 -ounce 40-inch	13.75 @	14.00
8½-ounce 40-inch	.... @	....
10 -ounce 36-inch	.... @	....
10 -ounce 40-inch	17.35 @	17.50
10 -ounce 45-inch	Nominal	
10½-ounce 40-inch	17.75 @	18.00

Chemicals and Compounding Materials

NEW YORK, December 10, 1919.

The market continues to hold its undertone of firmness and prices are generally firmly maintained. The unsettled conditions brought about by the coal strike are of course reflected in the market for these materials, but the market was in such a strong position, and prices so firm, that little material effect has been produced.

Producers of many lines of raw materials are falling behind in their deliveries, and are booked solid for the next few months. This is especially true as to lithopone and barytes. Shortages in other lines tend to cut down production and increase prices, as in linseed oil and in toluol and benzol. The car shortage is causing some trouble to purchasers, but producers seize upon their inability to ship goods promptly as a welcome relief from pressing demands for deliveries, and utilize the time "wasted" in catching up with their orders wherever possible.

EXPORTS CURTAILED

Many ships are having difficulty in obtaining fuel sufficient to take care of their requirements for trans-ocean voyages, and as a result exports are being held up somewhat until the situation eases off. The exchanges situation has shown no material improvement and this factor also acts to hamper foreign buying in the American markets. American exporters are having many difficulties to contend with in expanding and carrying on American foreign trade abroad, and all is not rosy with this branch of American trade. Foreign buyers complain that American exporters are sending abroad representatives that know nothing of foreign markets, and after securing business, fail to take proper precautions in packing, marking, etc.

BENZOL HARD TO GET

Supplies of benzol continue light, and the market is strongly maintained at quoted levels. Producers are offering in small quantities at 35 to 37 cents per gallon on the spot.

LITHARGE SOLD UP

Conditions in this market have shown no material change since our last report and the market is closely sold up to the end of the year on the basis of 9¾ to 10½ cents per pound for American powdered in casks. A good call for litharge is coming in from the rubber trade, but paint manufacturers are taking the bulk of the production at this season.

LITHOPONE UNCHANGED

The market for lithopone holds firm on the established price basis of 7 cents per pound, which has obtained for several months past. Producers are unable to accept much spot business, and are booking orders only for delivery in February or March in 1920, although some may have a little available for January shipment.

WHITING HOLDS FIRM

A steady undertone characterizes the market for whiting, and prices hold unchanged at $1.15 and $1.20 for commercial and $1.50 and $1.75 per cwt., on the spot. Supplies of English chalk are arriving in better volume.

ORANGE MINERAL STRONG

The market for this product is showing a firmer undertone, and talk of increased prices is heard of in the trade. Supplies are inadequate at the present time, and producers are unable to give any attention to the export orders that are coming in, devoting their entire attention to taking care of their regular domestic business. Prices are strongly held at 13¼ and 13¾ cents per pound.

BARYTES STOCKS SCARCE

Stocks of barytes are scarce, and producers are making every effort to speed up their output to take care of the increased volume of business offered them. At present, they are behind in their deliveries, and the difficulties brought about by the coal strike are causing further difficulties to them. The market holds firm at $21 and $21.50 per ton, f. o. b. mills.

GLUE TRADE ROUTINE

A steady routine consuming demand for glues is reported, and a good volume of business is being booked by producers. Prices hold firm and unchanged at 35 and 44 cents per pound for extra white, 30 and 35 cents for medium white, 25 and 36 cents for cabinet, and 20 and 25 cents per pound for low grade cabinet.

DRY COLORS ACTIVE

A continued active demand for the various dry colors is noted in the market, and the undertone is generally firm. Increasing demand for blacks is reported, and the market holds unchanged as quoted. A steady consuming inquiry for browns is reported, and stocks of this color are more adequate than in other lines. Demand for blues holds strong and active, and the market quotations are unchanged. Producers have fallen behind in their deliveries on greens, and the market is showing an advancing tendency. Producers of reds are working to capacity to keep up with the demand for their product, and prices hold firmly. Yellows hold firm and unchanged.

ZINC OXIDE WANTED

Operations in zinc mills are being conducted at capacity, 24 hours per day, and still producers are having difficulty in keeping production abreast of the demand. Some trouble in obtaining sufficient labor is being experienced at the mills, it is reported. All supplies are eagerly sought after because of the present scarcity, and the matter of price is a trivial one with most consumers, who would be glad to pay more if able to obtain sufficient quantities.

WAX DEMAND IS GOOD

A steady consuming demand for wax is reported in the local market, and spot prices are well maintained in most instances. Beeswax and bayberry generally quiet, under a fair demand, while carbauba is active on spot, both for domestic and export account. The market for Japan wax is showing a strong undertone, and there is a good consuming demand reported by dealers.

OILS HOLD FIRM

There is a good consuming demand for the various oils reported, with the market holding generally steady. Linseed oil is strong under light supplies, attributed mainly to the shortage of seed. Corn oil is strong maintained, production having been seriously slowed down by the closing of several plants by the coal shortage. Palm oil is generally firm. Trading in rapeseed oil was quiet, with prices well maintained on the spot position.

Current Prices for Chemicals, Fillers, Colors, etc.

Acetone, carlots	lb.	.13½ @	—
Smaller lots	lb.	.15 @	.16
Accelerator, in drums	lb.	.85 @	1.00
Acids, Acetic, 56%	cwt.	6.00 @	6.50
Carbolic, C. P.	lb.	.12 @	.20
Muriatic, 20 deg.	cwt.	1.65 @	1.75
Muriatic, 22 deg.	cwt.	2.15 @	2.40
Nitric, 42 deg.	cwt.	7.00 @	8.00
Nitric, 40 deg.	cwt.	6.75 @	7.50
Sulphuric, 60 deg.	ton	19.00 @	23.00
Tartaric, crystals	lb.	.74 @	—
Aluminum Flake	ton	29.00 @	31.00
Aniline oil, bulk basis,			
Contract		— @	—
Imported		Nominal	
Domestic		.32 @	.34
Antimony, metal spot	lb.	.09½ @	.09¾
Oxide	lb.	.10½ @	.11½
Sulphuret, red	lb.	.25 @	.30
Sulphuret, golden	lb.	.30 @	.35
Sulphuret, crimson	lb.	.45 @	.50
Needle, powdered	lb.	.10 @	.11
Asbestos	ton	35.00 @	45.00
Asphaltum, Egyptian	lb.	.16 @	.20
Domestic	ton	22.00 @	30.00
Barium sulphate, technical	lb.	.04½ @	.05
Sulphide	lb.	07¼ @	.07½
Barytes, prime white imported	ton	Nominal	
white, domestic	lb.	.30 @	.31
off color, domestic	lb.	.21 @	.24
Southern, f.o.b. mills		21.00 @	—
Western, f.o.b. mills		21.50 @	—
Benzol, pure, bulk	gal.	Nominal	
Beta-naphtol, sublimed	lb.	Nominal	
unsublimed	lb.	Nominal	
Blacks, Drop	lb.	.05½ @	.15
Ivory	lb.	.16 @	.30
Carbon, gas, cases	lb.	.12 @	.25
Lampblack, R. M.	lb.	.15 @	.45
Mineral blacks	ton	35.00 @	45.00
Blues, Prussian	lb.	.70 @	.75
Soluble	lb.	.70 @	.80
Ultramarine	lb.	.70 @	.80
Browns,			
Umber, Turkey, burnt, powdered	lb.	.05 @	.06½
American, burnt	lb.	.03½ @	.04
Cadmium sulphide, yellow	lb.	1.50 @	1.75
Carbon, disulphide, bulk	lb.	.06 @	.07
tetrachloride drums	lb.	.11 @	—
Caustic Soda, 76@78%	cwt.	3.25 @	3.50
Chalk, precipitated, extra light	lb.	.05⅝ @	.06⅝
heavy	lb.	.05½ @	.06
China clay, domestic	ton	8.50 @	20.00
imported	ton	18.00 @	23.50
Fossil flour	lb.	.03¾ @	.05
Gilsonite	ton	47.50 @	60.00
Glue, extra white	lb.	.35 @	.40
medium	lb.	.30 @	.35
low grade		.20 @	.25
foot stock		.13 @	.18
brown foots		.12 @	.16
common bone		.11 @	.15
Glycerine, C. P. (drums)	lb.	.23 @	.23½
cans		.21 @	.21½
second hands		— @	—
Graphite, flake (bbl.)	lb.	.14 @	.25
powdered (bbl.)	lb.	.05 @	.10
Green, chrome, R. M.	lb.	.35 @	.40
Ground glass (fine)	lb.	.03½ @	.04
Hexamethylene	lb.	.90 @	1.00
Infusorial earth, powd'd.	lb.	.02 @	.035
bolted	lb.	.035 @	—
Iron oxide, red, reduced grades	lb.	.07 @	.08
red, pure, bright	lb.	.15 @	.20
Lead, red, dry (casks)	lb.	.10¼ @	.10½
sublimed	lb.	.09¼ @	.09¾
white, basic carb.	lb.	.09 @	.09½
white, basic sulp.	lb.	.08¼ @	.08½
Lime flour	lb.	.01¾ @	.02
Litharge (casks)	lb.	.09¾ @	.10½
English	lb.	*.12 @	.13
Lithopone, domestic, bbls.	lb.	.07 @	—
in bags	lb.	.06¾ @	—
Magnesia, carbonate	lb.	.21 @	.22
calcined light	lb.	— @	.75
Magnesite, calcined, pwd.	ton	50.00 @	65.00
Naphtha, motor gasoline, (steel bbls.)	gal.	.24½ @	—
68 @ 70 degrees (steel bbls.)	gal.	.30½ @	—
70 @ 72 degrees (steel bbls.)	gal.	.31½ @	—
73 @ 76 degrees (steel bbls.)	gal.	.33½ @	—
machine (wood bbls.)	gal.	.41½ @	—
Oil corn, crude factory	lb.	.19 @	.20
corn, refined (bbls.)	lb.	.23 @	.24½
linseed (bbls.)		1.89 @	—
in carloads, spot		1.77 @	—
tank cars		1.82 @	—
Oil palm, Lagos	lb.	.16¾ @	—
Niger		.15¾ @	.16
pine, yellow	gal.	1.21 @	—
rapeseed, refined	gal.	1.50 @	—
rapeseed, blown	gal.	1.65 @	1.70
rosin, first rectified	gal.	.92 @	—
second run		.94 @	—
tar (commercial)	gal.	.53 @	—
Orange mineral, American	lb.	.13¼ @	.14¼
imported	lb.	.15 @	.20
Paraphenylenediamine	lb.	2.90 @	3.40
Petrolatum, bbls., amber	lb.	.07½ @	.08
pale yellow	lb.	.06 @	.07
Pine tar kiln	bbl.	14.00 @	—
Pitch	bbl.	8.50 @	—
Plaster of paris	bbl.	2.00 @	3.00
Red Tuscan	lb.	.22 @	.30
red (American)	lb.	.14 @	.16
Indian (English)	lb.	.14 @	.16
Standard	lb.	.12 @	.16
Rosin (common to good)— 280 lbs.	bbl.	17.00 @	—
Rotten stone, powdered	lb.	.02½ @	.04½
Rubber, substitute, black	lb.	.13 @	.17
white	lb.	.15 @	.24
brown	lb.	.20 @	.25
Shellac, fine orange	lb.	— @	—
T. N.	lb.	1.20 @	1.25
Bleached ordinary	lb.	1.20 @	1.30
Bleached bonedry	lb.	1.40 @	1.50
Silex (silica)	ton	22.00 @	40.00
Soapstone, powdered	ton	12.00 @	17.50
Starch, corn, powd.	cwt.	5.62 @	—
pearl		5.37 @	—
Jap. potato	lb.	.09⅝ @	.09⅝
Sulphur, crude	ton	*50.00 @	—
100 pounds		3.20 @	4.25
roll		2.95 @	3.40
commercial superfine		2.50 @	—
Talc, American	ton	20.00 @	40.00
French	ton	*30.00 @	35.00
Toluol, pure, in drums	gal.	.34 @	.35
commercial		.34 @	.35
Tripolite earth	lb.	.01⅛ @	—
Turpentine, pure gum— spirit	gal.	1.67 @	—
wood	gal.	1.63 @	—
Venice, artificial	gal.	.15 @	.16
true		4.50 @	—
Vermilion, English	lb.	1.60 @	1.65
American		.25 @	.30
Wax, beeswax, crude yel.	lb.	.44 @	.45
refined		.47 @	.48
Bayberry		.50 @	.55
ceresin, white	lb.	.16 @	.17
yellow		.14 @	.15

* Boiled, 5 barrels or more, 2c. extra. Double boiled, 5 barrels or more, 3c. extra.

Scrap Rubber

NEW YORK, DECEMBER 10, 1919.

Trading in scrap has been fair in a routine way during the past fortnight, but buyers are taking goods only in a hand to mouth fashion in view of the present unsettled conditions in the trade. Some call for old tires is reported, but there is little interest manifested in inner tubes. Old boots and shoes are not attracting much attention, while there is a little routine inquiry for arctics.

	Cents per pound.		
Boots and shoes	8.00	@	8.25
Arctics, trimmed	6.00	@	6.25
Arctics, untrimmed	5.00	@	5.50
Tires—Automobile	3.75	@	4.00
Bicycles, pneumatic	2.50	@	3.00
Mixed hose	1.75	@	...
Air brake	2.75	@	3.00
Inner tubes, No. 1	20.00	@	21.00
Inner tubes, No. 2	10.00	@	11.00
Red tubes	9.50	@	10.00

Crude Rubber

NEW YORK, DECEMBER 10, 1919.

The market for crude rubber stock is in a state of suspended animation, with all factors waiting for some further developments before going ahead. The strike of coal miners has shut down many factories, and as a result rubber manufacturers are practically out of the market insofar as purchasing new commitments of crude are concerned. About the only activity is the delivery of newly arrived rubber on contracts, and even this is being hampered by the coal shortage, which has curtailed railroad transportation.

Prices quoted below are those last paid in the active market, and represent the views of sellers at the present time. It is still believed however, that these prices could be shaded about ½ cent per pound on a firm bid for stock during the current dullness on spot markets. The position of the market when the strikes, etc., are over is problematical, but no lower prices are anticipated by well-informed factors in the trade.

	Cents per pound.		
Para—Up-river fine	48	@	48½
Up-river medium	51	@	51½
Up-river coarse	35	@	....
Caucho ball	35	@	....
Islands fine	48	@	....
Islands coarse	21½	@	....
Cameta	24	@	....
Madeira fine	62	@	....
Knapsack	73	@	....
Ceylons—Smoked sheets, ribbed	51½	@	....
Smoked sheets, plain	50½	@	51
First latex pale crepe	52	@	....
Amber Crepe	Nominal		
Clean brown crepe	54	@	....
Rio Nunez string	55	@	....
Palembang	14	@	....
African	33	@	....
Prime Surinam sheets	1.02	@	....
Centrals—Corinto prime	35	@	....
Esmeralda, prime	35	@	....
*Balata sheets	1.00	@	....
Guayule, wet	27	@	....
Balata, block, Panama	57	@	....

* Nominal.

Akron Stock Prices

(Special Akron Correspondence)

Transactions in the Akron rubber stock market in the last half of November and the first of December were practically without sensational features that have characterized the exchange during the past boom months. American Rubber and Tire common, on the strength of contemplated refinancing, has advanced 30 points to a bid of 80 with none offered. Firestone common has dropped below the 200 mark and is selling around 195. Goodyear is down to 400. Goodrich common is back to 80. Portage is a few points higher with an apparently strong demand.

Following are the quotations as of December 2:

	Bid.	Asked.
Amer. R. T., com	80	...
do. pfd.	107	...
Amazon Rubber	...	95
Firestone, com	191	196
do. 6 per cent. pfd	98	99
do. 7 per cent. pfd	98½	100
General, com	500	...
do. pfd.	100	...
Goodrich, com	78	80
do. pfd.	104	104½
Goodyear, com	400	410
do. pfd. (new)	100½	101½
India Rubber	215	...
Kelly Springfield	126	128
Mason, com	25	...
do. pfd.	...	82
Marathan, com	...	55
Miller, com	200	210
do. 1st pfd	105	107
do. 2nd pfd	103	103½
Mohawk, com	330	...
do. pfd.	100	110
Portage, com	134	136
do. pfd.	92	93
Republic, com	4½	5½
do. 1st pfd	...	95
do. 2nd pfd	...	85
Rubber Products	133	136
Star Rubber, com	350	450
do. pfd.	97	99
Swinehart, com	95	99
do. pfd.	94	...
Phoenix, com	22	25
do. pfd.	...	90
Standard Tire	170	...

American Rubber Patents

ISSUED NOVEMBER 25, 1919

1,322,518—To Louis E. Barton, Niagara Falls, N. Y., assignor to The Titanium Alloy Manufacturing Company, New York, N. Y. Rubber and method of obtaining the same.

1,322,529—To Richard S. Bryant, Cleveland, Ohio, assignor by mesne assignments to The Standard Parts Company, Cleveland, Ohio. Rim for vehicle wheels.

1,322,550—To Thomas Venable Edmunds, Winston-Salem, N. C., assignor of one-half to Raymond G. Parker. Puncture-preventing material for tires.

1,322,583—To Henry P. Kraft, Ridgewood, N. J. Tire valve.

1,322,608—To Harold N. Palmer, Griswoldville, Mass. Resilient tire.

1,322,678—To Emil R. Draver, Richmond, Ind. Wheel-carrier.

1,322,679—To Emil R. Draver, Richmond, Ind. Carrier for demountable rims.

1,322,680—To Emil R. Draver, Richmond, Ind. Wheel-carrier.

1,322,685—To John Armfield Franklin, Pittsburg, Pa. Vehicle-wheel.

1,322,739—To Fred H. Van Loozen, Cleveland, Ohio. Armored tire.

1,322,777—To Maxwell C. Frank, Piedmont, Calif., assignor of one-half to Nate Le Vene, San Francisco, Calif. Pneumatic tire.

1,322,782—To Benjamin G. Gilbough, Los Angeles, Calif. Pressure-gage for tires.

1,322,843—To Harry E. Townsend, Brooklyn, N. Y., assignor to Anchor Cap and Closure Corporation, Brooklyn, N. Y. Method for making rubber rings and the like.

1,322,866—To Edward A. Banschbach, Chicago, Ill. Split-rim air-retainer.

1,323,079—To John J. Luck, San Antonia, Texas. Tire construction.

1,323,160—To Arthur Alexander Crozier, London, England. Elastic tire.

1,323,165—To Peter De Mattia and Barthold De Mattia, Clifton, N. J. Tire building core and chuck.

ISSUED DECEMBER 2, 1919

1,323,259—To Hugh A. Falvey, Chicago, Ill. Puncture-proof tire.

1,323,457—To Lewis De Holczer, Sioux City, Iowa. Vehicle-wheel tire and rim.

1,323,487—To Charles H. Payne, Cincinnati, Ohio. Inking-pad.

1,323,547—To Theodor Petersen, Copenhagen, Denmark. Deflated-tire circuit-closer.

1,323,573—To Philip P. Bongio and Elonzo Stephenson, Fort Worth, Texas, assignors to Two Cure Retread Mold Company, Fort Worth, Texas. Apparatus for curing tire-castings.

1,323,589—To Louis Gottschalk, Rahway, N. J. Esther Gottschalk administratrix of Louis Gottschalk, deceased. Process of synthetically producing rubber or like substances.

1,323,600—To Paul E. Luebcke, Chicago, Ill., assignor of one-half to Horace K. Ryan, Chicago, Ill. Inner tube for vehicle-tires.

1,323,706—To Colin Macbeth, Birmingham, England, assignor to The Dunlop Rubber Company, Limited, Westminster, London, England. Manufacture of inner tubes of pneumatic tires.

1,323,794—To William H. Sitts, Chicago, Ill. Resilient vehicle-wheel.

1,323,807—To Louis Anderfuhren, Baltimore, Md. Pneumatic-tire signal.

1,323,951—To Clayton W. Bedford, Akron, Ohio, assignor to Goodyear Tire and Rubber Company, Akron, Ohio. Art of preparing caoutchouc substances and vulcanization product therefrom.

1,323,961—To David Butler, Montezuma, N. Y. Tire-rim tool.

1,323,976—To Charles C. Gates, Denver, Colo. Process of applying half sole or repair tires.

1,324,016—To William B. Harsel, Akron, Ohio, assignor to The Goodyear Tire and Rubber Company, Akron, Ohio. Marker for tires.

ISSUED DECEMBER 9, 1919

1,324,033—To Joseph Busch, Detroit, Mich. Rim retracting and distending device.

1,324,069—To Lucien G. Salembier, Tenafly, N. J. Non-skidding device.

1,324,165—To Joseph E. MacKay, Los Angeles, Cal. Tire.

1,324,252—To Walter I. Hopkins, Washington, D. C. Rim lock.

1,324,282—To Edward Sterns, St. Louis, Mo., assignor by mesne assignments to Surety Tire and Rubber Company, Wilmington, Del. Vehicle tire employing an inner tube.

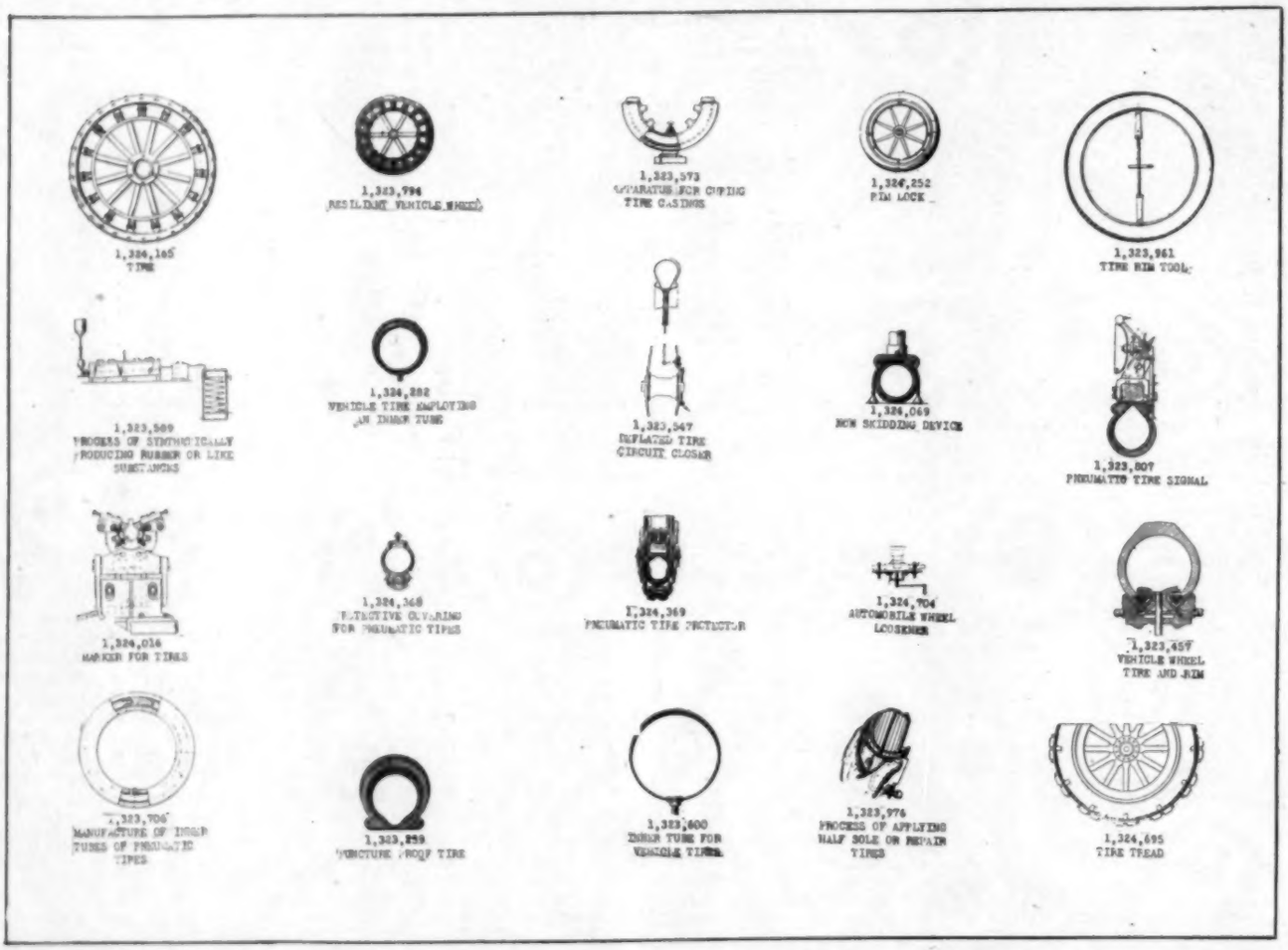
1,324,368—To Charles Frederick Fox Allan, Sydney, New South Wales, Australia. Protective covering for pneumonia tires.

1,324,369—To Charles Frederick Fox Allan, Sydney, New South Wales, Australia. Pneu-tire protector.

1,324,695—To Louis Schlissel, Brooklyn, N. Y. Tire tread.

1,324,702—To Samuel J. Stein, Greenwood, Miss. Attachment for pneumatic tires.

1,324,704—To Grant W. Vose, Oleta, Cal. Automobile wheel loosener.



Increased Duty on Canadian Tires

Judge McClelland, of the Board of United States General Appraisers, has recently handed down a reappraisement decision confirming a ten per cent advance on the duty on automobile tires shipped into the United States from Canada.

The importers contended that as the result of the restricted method of distribution there was no foreign market which could be recognized by the customs authorities in appraising the tires for duty. The General Appraiser, however, contended that the manufacturer's prices plus a ten per cent commission allowed the wholesaler of the tires represents the foreign market value for customs purposes.

Portage Orders Dividend Paid

At a meeting of the directors of the Portage Rubber Company, of Akron, Ohio, held on Friday, December 12, it was ordered that the next quarterly dividend of ½ four per cent be paid on January 1, 1920, on the preferred stock outstanding and of record on December 20, 1919.